

# **The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness**

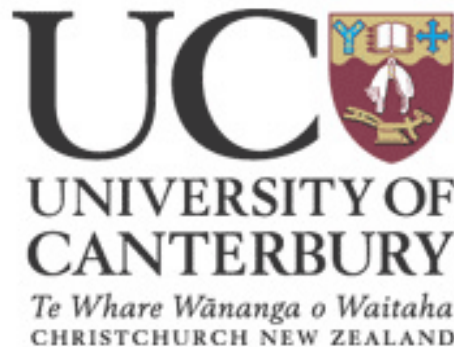
Submitted in partial fulfilment of the requirement for the degree of:

**MASTER OF COMMERCE**

Department of Management, Marketing and Entrepreneurship

*Michelle. A. Bouton*

*2014*



For my dear friend Shannon

*Memories are precious*

### Acknowledgements

Firstly, I would like to thank my supervisor Associate Professor Ekant Veer. You believed in my abilities long before I did. Through this journey you gave me the motivation, encouragement and inspiration to keep trudging along. Not many people are accessible 24/7, even when they are on the other side of the world! I could not have wished for a better supervisor, mentor, father figure and friend all in one.

Thanks to the University of Canterbury for giving me the space to get my work done. Also, for the funding throughout the year, which allowed me to primarily focus on my studies and pursue research into a field, that I am so extremely passionate about.

To Sarah, (my Masters buddy) thanks for all the company! You made coming into Uni on those cold days so much more bearable. Your warm, loving and supportive nature kept me optimistic about my research. I am so thankful that I had you share in the ups and downs throughout the year. Whether it was with pizza, coffee or wine you kept me sane!

Ashleigh, you are the best flat mate, friend and editor a girl could wish for! When I was ready to throw in the towel because my writing no longer made sense you helped me get to the other side! To Pip, Nicole, Cahn and Sarah thanks for the company, the reassuring words and the shoulder to lean on during the stressful times.

And finally, to Mum and Dad, for teaching me the value of pursuing what you enjoy and for being my inspiration and support throughout my studies. It is always reassuring to know how proud you are. Thanks for crafting me into the woman I am today and for being great role models for the past 23 years!

## 1.0 ABSTRACT

Currently, nutritional labelling is difficult to interpret and time-consuming to read. This is a major problem as many consumers are overweight and resort to eating readymade meals and snacks. These are likely to be energy-dense food and beverages that are high in fat, sugar and artificial preservatives. Simplifying nutritional labels could help stem rising obesity rates. Front-of-pack labels are a tool to help overcome this problem by providing consumers with understandable, visible information to aid them into making healthier food choices.

This study expands on past research by evaluating 7 separate pre-existing, proposed and fictitious front-of-pack nutritional labels. It includes Information, Image or a combination of both Information and Image based labels. Plus No label, which is a control variable to determine the effectiveness of each label. The nutritional labels were placed on a chicken salad sandwich which was kept consistent for all 14 manipulations. The nutritional components were altered to reflect either an Unhealthy or Healthy sandwich. The design of this experiment is a 2 (nutritional level: Healthy, Unhealthy) X 7 (labelling system: Traffic Light, Star, Running, Walking, Third Party, Daily Intake, Caloric, None) between subjects design.

The results provide evidence of the urgent need to communicate nutritional information more effectively. Images, simplicity, colour and reliability, are determining label elements that influence consumption behaviour. The results from this study help to understand behaviours associated to labels. This study draws differences between those who partake in health behaviours and those who do not. This information could help to trigger support for a new, more effective front-of-pack labelling system to be put in place globally to guide consumers in making healthier food choices.

## Table of Contents

1.0	ABSTRACT.....	3
	THESIS OUTLINE .....	7
2.0	INTRODUCTION .....	5
3.0	AIM.....	8
4.0	LITERATURE REVIEW .....	8
5.0	JUSTIFICATION .....	21
6.0	HYPOTHESIS .....	22
6.0	METHOD .....	28
7.0	MANIPULATIONS.....	33
8.0	MEASURES .....	42
9.0	RESULTS .....	56
10.0	DISCUSSION .....	98
11.0	CONCLUSION.....	111
12.0	REFERENCES .....	112
13.0	APPENDIX.....	125

## 2.0 INTRODUCTION

Almost two in three adults and one in three children are either overweight or obese. “ Without clear action, these figures will rise to almost nine in ten adults and, two in three children, by 2050,” (Facility of Public Health). The rapid climb in obesity rates can be attributed to the lack of knowledge and education surrounding nutritional information. Research has found that consumers think terminologies on food labels are technical and very advanced (Wandel, 1997). Visibility of food labelling is also a big problem. Many consumers have limited time to shop and require labels that are easy to understand and read. Past research has found that more than 70% of consumers believe the labelling system needs to change to make nutritional information easier to understand (Kristal, Levy, Patterson, Li and White, 1998).

Front-of-package food labelling is an important tool which provides consumers with clear nutritional labelling to help identify healthy food choices (Kelly et al., 2004). Last year my study on nutritional food labelling determined a need for more straightforward front-of-pack labels. Results showed that 80% of the 220 participants wished nutritional food labels on food products were easier to understand. Labels, stating recommended exercise expenditure, provide consumers with the necessary information to help them make healthier food choices. Findings show that consumers are more likely to avoid unhealthy products, and usually tend to feel guiltier and exercise if they do consume an unhealthy product. These findings have helped to establish an understanding in consumption behaviour, when labels are in simplistic, relatable terms; they are likely to be more effective in aiding consumers to make healthier food choices.

Research demonstrates how exercise labelling is an effective and viable way of communicating to consumers the total energy component of the product. Sacks et al. (2013) reports that participants ordered and consumed less when labels displayed the distance or time required to

burn off the product. Whilst these findings are useful, a more in-depth study will determine the effectiveness of the exercise label, against a variety of other labelling systems.

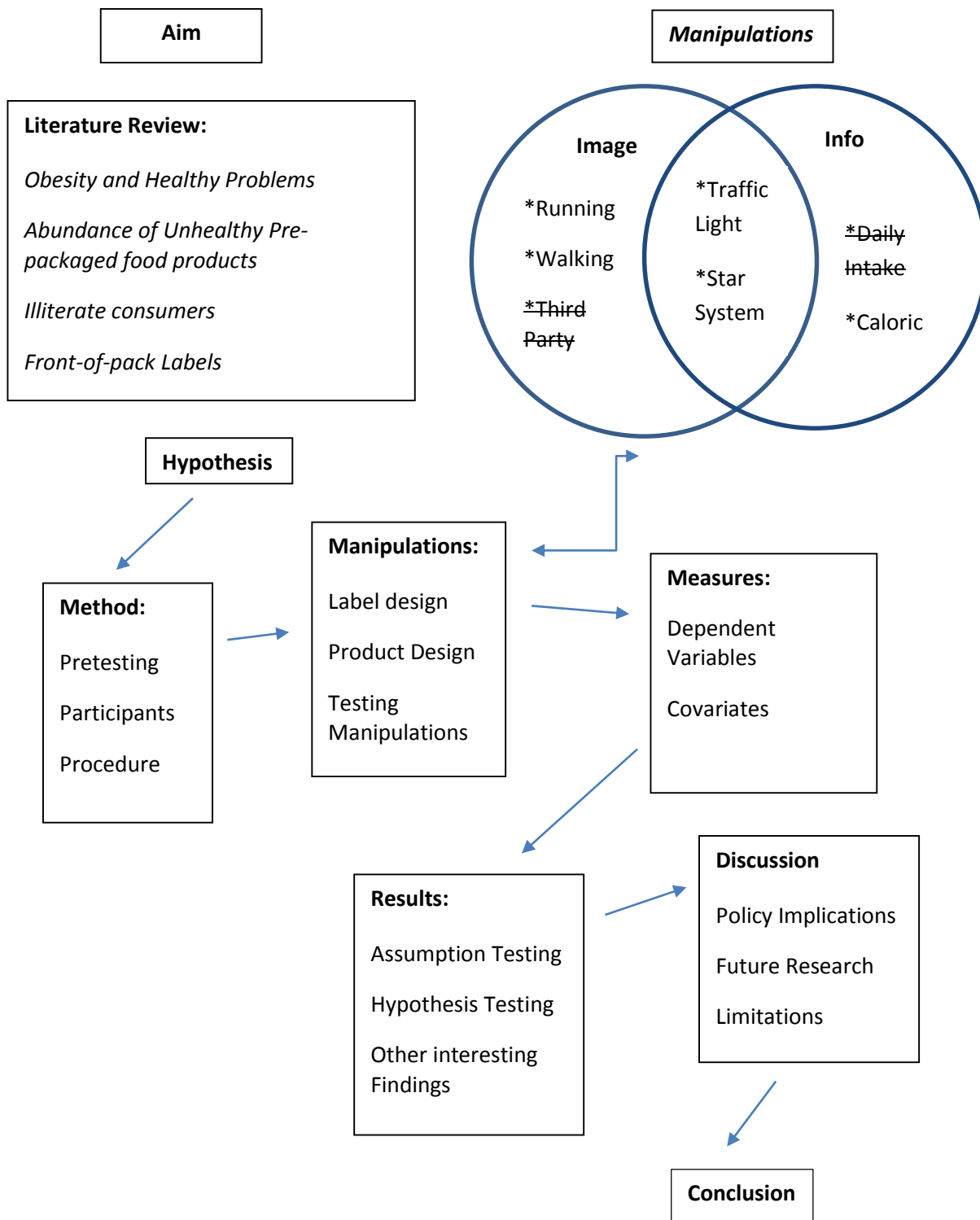
There is an array of front-of-pack nutritional labels on products around the globe, but the effectiveness of these labels is currently under scrutiny. The Daily Intake Guide and Caloric label are voluntary front-of-pack systems in place in New Zealand and Australia. However, findings suggest both of these systems are ineffective and fail to provide consumers with the necessary information (Choice, 2013). Third Party labels are an effective way to highlight healthy products; however, most endorsers require a fee for the company to display the label on their product (Burton-Bradley, 2012). The Traffic Light labelling system is a method used in the United Kingdom. It has had successful results in improving consumer's food and drink choices. However, there has been strong debate over whether the system should be mandatory in New Zealand and Australia (Brimelow, 2007). A proposed label thought to be more beneficial is the Star system which is likely to hit shelves shortly. O'Neill (2012) indicates that this system is more likely to be backed by industries, as unlike the Traffic Light system there are no negative colours associated to it.

The extensive range of nutritional labels allows this research to recognize which form of communication best assists different types of consumers into making healthier food choices. It is predicted that healthy consumers will be the easiest to understand. Therefore, this study will seek to isolate illiterate, unhealthy consumers who are most at risk of health problems.

Previous literature has looked into the effectiveness of each labelling system. Visible, relatable and appealing labels are most useful. However, Research is yet to determine which labelling system is the most effective at aiding consumers to make healthier food choices. A quantitative study will determine participants overall perceptions towards the product, label, consumption,

price and purchase and behaviour intention. These responses will be analysed to conclude if the nutritional label alone has an effect on consumption behaviour.

## THESIS OUTLINE





### 3.0 AIM

The aim of this study is to determine which front-of-pack labelling system is most effective in improving consumer food choices. This experiment will try to fill the gap in literature by conducting an experiment which combines a variety of current, proposed and fictitious labels to determine which is the most effective in aiding consumers to make healthier food choices. In particular, this study will focus on illiterate consumers yet to adopt a healthy lifestyle, as they are most in need of a simplistic label. The results will gain further insight into the fundamental relationship between nutritional labels and subsequent consumption and product decisions.

### 4.0 LITERATURE REVIEW

Nutritional labels help determine the exact nutritional content of a food or beverage. Food labelling provides a cost-effective vehicle for helping consumers identify healthy food choices (Kelly et al., 2004). However, Wandel (1997) states that some individuals find interpreting nutritional labels timely and cumbersome. In accordance with this Sacks (2011) claims, “only a small percentage of the population read the current back-of-pack nutrition information panels and even fewer understand it” (p.1). To overcome this problem, front-of-pack food labels were introduced. According to Kelly et al. (2004) the addition of simplified nutrition information on the front of food packages, known as front-of-pack food labelling, helps to assist consumers in making more informed food purchases. Front-of-pack food labelling provides simple, easy to interpret and compare, visible information about a food or drink product (AMA, 2011). Sayid (2013) claims that “Clear, simple, consistent front-of-pack nutritional labelling has an important role to play in making it easier for people to eat healthily, but it is no good doing this

in isolation, it has got to be part of a wider Government strategy to tackle obesity and diet-related disease” (p.1).

#### *4.1 Daily Intake System*

The Daily Intake system provides the percentage of core elements contained in a product, as a comparison to the recommended daily intake. At present the Daily Intake system focuses on either the overall amount of energy in the product or the percentage of daily intake in sugar, fat, saturated fats, salt, trans fats and energy per serve (Madden, 2009). This system is a voluntary front-of-package label that is already in place in New Zealand and Australia. It appears on many energy dense, nutrient poor foods and beverages, especially, soft drinks and confectionary (Cater, Malls and Phan, 2011). A recent report conducted by the George Institute of Global Health found that the labelling system fails to provide consumers with the necessary information to compare the nutritional content of similar products (Choice, 2012). In Accordance with this Campbell (2013) states that senior doctors have criticised the label as “deceptive and utterly baffling to most consumers” (p.1).

#### *4.2 Caloric Labelling*

A more simplistic version of the daily intake guide is to display only the calories (or kilojoules) per serve. This states the calories in the product but not the daily percentage of calories in it. Caloric food labelling is a common way to communicate with the consumer how much energy is in a product. The notion of “energy” and its quotient in calories appears to be a relatively well-established and is as appropriate for nutritional assessment and measurement (EUFIC, 2011). Whist research maintains that the labelling system is well known, Cater et al. (2011) states that the Caloric label performs poorly against the Traffic Light label and the full Daily

Intake Guide. Results suggest that Caloric labelling may be an ineffective system that is unlikely to aid consumption behaviour. Reasoning for this could be because the conversion of energy in (calories) to energy out (exercise) is not as easy to comprehend (Godwin, Speller-Henderson and Thompson, 2006). Consumers lack knowledge and skill on how to convert the caloric figure into exercise time. ORC Marco (2003) believes consumers are lazy and bad at mathematics and brands are perceived as more trustworthy if consumers do not have to do the maths for themselves. It is evident that future studies need to be conducted in order to determine the effectiveness of this label.

A major problem is the inconsistency of food labels, which either display, calories per serve (most often found on products from the United States) or kilojoules per serve (more commonly found on products from the United Kingdom and Australia). However, actual energy/exercise output is recorded globally in calories (Godwin et al., 2006). Last year my findings showed that 55% of participants could not convert kilojoules to calories. Consequently, this discrepancy between the recording of energy input and output makes calculating the accurate energy expenditure of a product very difficult.

#### *4.3 Traffic Light Labels*

Traffic Light nutritional labelling has been a widely recommended tool to improve public health and nutrition (Sacks et al., 2009). “This system uses red, amber and green signals to show consumers, at a glance, whether a product is high, medium or low in fat, saturated fat, sugar, salt and overall energy” (AMA, 2011, p.4). Studies have shown that the Traffic Light labelling systems are very successful in changing consumer behaviour. A recent survey showed over a third of men and women would leave a product on the shelf if it had a red traffic light

(Murray-West, 2013). Findings claim this is because the Traffic Light system makes it easy to identify healthier food choices by choosing products with green or amber lights, rather than red. Dudding (2012) states that unlike the mandatory nutritional information panel found on the back of packets, which require time and knowledge to interpret Traffic Lights labels would be readily visible when browsing shelves. These will provide pre-digested judgments for the busiest shopper: good, bad and somewhere in the middle.

Mesure (2006) reveals sales of breakfast cereal with green and amber are growing twice as fast as total breakfast cereals. Frozen, ready-made meals that have no reds on their labelling are also growing at an annual rate of 7 per cent. This contrasts with a 35 percent decline in frozen meals with reds on their labels. In another study, Morris (2012) found that when comparing the Traffic Light labelling system with other available food labelling formats, the Traffic Light labelling system was the most efficient. Kelly et al. (2004) agrees, by stating that consumers using the Traffic Light food labelling system are five times more likely than those using the Daily Intake label to identify healthier choices when comparing two similar products.

Although findings suggest the Traffic Light labelling system is successful, there is an enduring debate on whether Traffic Light food labelling should become mandatory in New Zealand and Australia. According to Metherall (2011), Federal Health Minister Nicola Roxon said, "there is currently not enough evidence to demonstrate any form of front-of-pack labelling, provides Australians with the nutritional information they need to make informed choices" (p.1). Madden (2009) criticises the Traffic Light system by stating that they work on a good food/bad food principle, but do not take into account the fact some sugars and some fats are necessary in a balanced diet. Many companies, which produce unhealthy food products, also disagree with the Traffic Light labelling system. According to Mesures (2006), "the Mr Kipling Cake brand admitted that using the scheme could put the company's troubled cake business under further pressure as their labels would include more reds than greens" (p.1). Dudding, (2012)

states that although the Traffic Light system exists in the UK, moving it to Europe was blocked by lobbying from Kellogg's, Mars, Nestle and Unilever who paid 1.6 Billion to make their case.

This year, a new Traffic Light label, was introduced known as the hybrid nutritional labelling scheme that combines Traffic Light labels, with guideline daily amounts (Campbell, 2013). According to Saydi (2013) "Research shows that, of all the current schemes, people like this label the most and they can use the information to make healthier choices. However not all sources agree, Murray-West (2013) states that "Instead of one coherent system, the food industry has produced a mishmash of labelling schemes that have not served the public well. It is known as a hybrid scheme, which means that it will contain elements of all of the current labelling schemes. This displays the traffic light colours (based on a standard 100g size), amount of sugar, salt and fat as a percentage guideline daily amount, as well as the words "high", "medium" or "low" by each category" (p.1)

A phone app called FoodSwitch has recently been developed, which incorporates the Traffic Light labelling system. This app allows the shopper to scan the barcode of packaged foods to discover its nutritional information based on the Traffic Light labelling system of red, orange and green. This provides advice to users on healthier options (Breakfast, 2013). It rates each product with a traffic light colour code for four nutrients - total fat, saturated fat, salt and sugar. Currently more than 8000 packaged food products are available on the app, but this figure is growing fast as the app has a crowd source feature which encourages users to add their own products to the database.

The app is predicted to reduce the risk of heart attacks and strokes by encouraging consumers to make healthier eating decisions. Choosing a healthier diet needed to be made easier according to nutritionist, Blakely (2013) "Good eating habits are one of the best and most cost-

effective ways to prevent disease and smartphone ownership has increased markedly and is now sitting at around 60%”. However, one of the major problems with this is that low health literate consumers who would benefit from this app the most are often cash strapped and, therefore, cannot afford the technology to access this app. As prices of Smartphones decrease, ownership will increase and, therefore, this application will become more widely accessible Blakely (2013).

There are many types of Traffic Light labels, which are each designed slightly differently. This study will use the most recently developed Traffic Light label design as it reflects the best eye appealing image. Also, it provides an opportunity to conduct research into this proposed labelling system and analyse how effective it is against other current labels.

#### 4.4 *Third Party Label*

Third Party labelling is used globally as an endorsement to healthy food products. An example of this is The Heart Foundation Tick which is used in retail food settings, such as supermarkets. The aim of the Tick is to allow consumers to identify the healthier choice within that food category (Heart Foundation Tick, 2012). Young and Swinburn (2002) state that “the *Pick the Tick* programme of the National Heart Foundation of New Zealand aims to provide a framework to improve nutrition labelling and to develop a healthy food supply” (p.1).

The Tick is the Heart Foundation's guide to help people make quick and easy healthy food choices. It also encourages food manufacturers to develop or modify food products that support the Heart Foundation's Guidelines for Tick Approval. In general, Tick foods are lower in saturated fat, sodium and added sugar and higher in dietary fibre (Heart Foundation Tick, 2012). This Heart Foundation Tick is acknowledged throughout New Zealand as a labelling

system that is placed on foods which meet a certain criteria. It has been described as an efficient system because it is simple, well recognised and has been proven to work (Signal et al., 2008).

There has been recent controversy in regards to the trustworthiness of this labelling system as many believe it is just a money-making scheme. Burton-Bradley (2012) says that, in recent years, the healthy Heart Tick is awarded and placed across an increasingly wide range of sugar filled foods, including burgers, pizzas, fruit bars, cereals and even some McDonalds products. Food critics accuse the organisation of selling its credibility, claiming its refusal to limit sugar in the Tick program has further eroded the public's trust. Nevertheless, it is evident that the Heart Foundation Tick is a somewhat useful tool which provides consumers with an easy-to-use guide on which products to consume in order to maintain a healthy diet (Burton-Bradley, 2012). While this labelling system may encourage consumers to eat healthier, it is clear that more research needs to be conducted before a trusted labelling system can be put in place that meets a healthier standard than the Heart Foundation Tick does currently. A recent study has reported that 83% of participants agree that the Tick made it easier to choose healthy foods and 65% confirm that they look, for the Tick logo, to help in choosing food (Aaker, 1991, p. 271).

A major problem with this is that participants are likely to recognize the Heart Foundation Tick. The Heart Foundation Tick is brand which would require a high level of ethical approval to be used in this study. Thus, this label will be manipulated to reflect a similar image. This Third Party label will test the effectiveness of positive endorsements used to promote healthy eating.

#### 4.5 *The Star System*

The Star system is a front-of-pack label in proposition, to show consumers the nutritional content of food products at a glance. This system is likely to be better supported by food industries than the Traffic Light system as there are no negative colours associated with the products.

There are currently two forms of Star labelling systems being examined. One is much like the stars used to help choose appliances; the more stars, the healthier the product. According to O'Neill (2012), the Star implies the product is not healthy but does not say bluntly that it is bad for you as the Traffic Light system does. There is still likely to be some resistance from food industries, but not nearly as much as the Traffic Light system, as Neergaard (2011) states food manufacturers don't like the idea of ranking one food as healthier than a competitor. However, Chapman (2012) admits it is unlikely to be as effective as the Traffic Light label in aiding consumers to make the healthiest food choice. But it is more prone to be approved by food manufacturers and, therefore, has a better chance of being on the supermarket shelf before long.

However, the Star system proposed in the United States is different to this. Instead of rewarding stars based solely on the energy component it is more complicated. The system rewards a star if each one of the five passed the nutrient criteria of saturated fats, trans fats, sodium and sugars and would also display the amount of calories per serve (Chapman, 2012). If either Star system is implemented, it would likely replace the in-depth nutritional panel found on the back or side of the pack. According to Neergaard (2011), the Institute of Medicine says, "it's time to put up front the most important information for health without the clutter." (p.1). The Star system could be an effective way to achieve this. To date, neither Star scheme has been subject to testing; therefore, it is evident more research needs to be conducted to determine the effectiveness that either system has in guiding consumers to make healthier food choices.



The system used in this study will include the caloric figure along with either one, two or three stars depending on the nutritional component of the product. This system is considered to be the most simplistic and effective at aiding low health literate consumers (O'Neill, 2012).

#### *4.6 Exercise labelling system*

Exercise labelling is another proposed idea, which has a major effect on consumption behaviour. "People have no idea what calorie counts on menus mean for their health, but if told a dish will take two hours of exercise to work off, people start thinking differently" (Stone, 2013, p.1).

New research suggests that displaying the amount of time needed to jog in order to burn off the calories rather than showing a percentage of daily intakes, may be more effective than other labelling systems in deterring customers from consuming a product (Bleich, 2011). Hogben (1949, cited in Veer and Rank, 2012) maintains that using images is a stronger method of communication when comparing it with all forms of text-based communication. Reasoning for this is "images offer a deeper associated meaning beyond the physical representation" (Veer and Rank, 2012, p.226). Therefore, an image of a person jogging and the amount they need to jog for is likely to be more effective than the text communication of the daily intake percentage of the product.

The study looked at African American teenagers, a demographic with one of the highest levels of obesity and the lowest levels of health literacy. The aim was to determine if their sugary drink consumption changes when people are shown the amount of exercise needed to burn off the product (Bleich, 2011). Teenagers at stores were observed where signs displayed either Caloric labelling, Daily Intake guides, or the time spent jogging that would be needed to burn

off the drink. The study concluded that the most powerful influence was the calorie conversion to exercise minutes (Relax-news, 2011). Bleich (2011) stated, "Most Americans would be floored to learn it takes 50 minutes to burn off one bottle of soda, a nutritionally worthless beverage," (p.1).

Recently, another study was carried out in the UK. This used four variables of labelling; No label, Caloric labelling, Caloric and miles of Walking and Caloric and minutes of Walking. Findings showed that participants who received no nutritional information ordered a meal totalling an average of 1020 calories. Those participants who received information about recommended walking distance and caloric information ordered an average meal totalling 826 calories (Khamsi, 2013). Therefore, when shown information regarding exercise distance people consume at least 20% less energy/calories. Showing the amount of miles recommended walking, also proved to be a more effective method, than displaying the amount of time recommended walking. As a result, the current study will consider using similar exercise variables.

New research into current physical activity has found that an alarming number of children are not getting enough exercise. Half of UK seven-year-olds do not do enough exercise. Only 38% of girls and 63% of boys out of the 6,500 children monitored, achieved the recommended hour of physical activity each day (Triggle, 2103, p.1). This research emphasizes the need to develop a labelling system which not only deters consumers but also encourages them to adopt a healthier lifestyle.

These recent findings demonstrate the need for a simplistic labelling system that clearly states the recommended exercise expenditure of a product. Bleich states "This is a huge window of opportunity for the public health community to provide consumers useful information about calories," (Khamsi, 2013, p.1).

#### 4.7 *Lack of Time and Knowledge*

One of the major factors shaping the modern food industry is the development of prepared foods, designed to cater to individuals on the go. According to Park and Capps (1997), the food industry's response to customers' changing lifestyles and preferences has seen an increase in prepared foods, like ready-to-eat items and snacks. These products have labour-saving characteristics to meet the needs of time constrained consumers. However, these processed foods, ready to eat meals and savoury snacks can be high in fat and salt (Kelly et al., 2004). Regular intake of these packaged foods increases the salt, fat and sugar content of the diet which can cause diabetes, heart disease and other health problems (Chi Health, 2012).

According to Bleich (2011), people are very bad at estimating the amount of calories in the food they consume. Kelly et al. (2004) states that by giving consumers a visible and easy-to-interpret food label that caters to people in a rush, they are more likely to make a more informed food choice.

Migone (2012) states that people are becoming less food literate and were consuming a large amount of processed foods with no exercise. She states "We need to start at a grass roots level – find out what the barriers are to people making the right decisions about food and cooking," (p.1). Complicated nutritional labelling is partly to blame for consumers being unable to interpret the food labels. Literature states the poor design of the nutrition labels and their technical language discourage consumers from using them in their daily life. It also describes the nutrition system as very technical and somehow disconnected from eating, which is simple and immediate (EUFIC, 2011). Kelly et al. (2004) states that consumers are more likely to make better choices if given a visible and easy-to-interpret food label that caters to people in a rush and to those who struggle to interpret pre-existing back-of-pack food labels. Another reason consumer's lack knowledge on how to read nutritional food labelling is because there

is little formal nutritional education on how to read labels (EUFIC, 2006). Providing a simplistic, understandable labelling system that can be understood by all consumers will be the best way to inform them of the nutritional content of the product.

#### 4.8 *Preventive Health Behaviours*

Kasl and Cobb (1966) describe preventive health behaviour as “an activity undertaken by a person who believes to be healthy for the purpose of preventing disease or detecting disease in any asymptomatic stage.” The Health Believe Model was originally formulated to explain preventive health behaviour, and why individuals did or did not engage in a wide variety of health related actions (Rosenstock, 1974). This theory determines that change depends on two main variables, 1) the value placed by an individual on a goal and 2) the individuals’ estimate that the likelihood of a given action will achieve that goal (Janz and Becker, 1984). Whilst there has been an advance in understanding of an individual’s health behaviour motivation, the core goals in understanding these actions have remained consistent.

Nutbeam (2006) emphasises the vital role that health literature plays on health behaviour and the key factors which influence this, “by improving people’s access to health information and their capacity to use it effectively, it is argued that improved health literacy is critical to empowerment” (p.1). Therefore, health literacy has a direct relationship with health behaviour, and a consumers overall reaction to the stimulant (in this case, a nutritional food label). These studies suggest that in order to motivate positive health behaviour change individuals need to understand the overall negative consequences of consuming an unhealthy product. Literature suggests that emphasis is given to more personal forms of communication, therefore, a label which is relatable to the consumer, is expected to be more effective in aiding people to make

more informed consumption choices with both high and low health active consumers (Nutbeam, 2006).

#### *4.9 Weight associated with self-motivation*

In order to understand consumption behaviour associated with nutritional food labelling, it is important to consider personal characteristics, which are likely to affect consumers' food choices. Labelling systems should aim to target consumers yet to adopt a healthy lifestyle. These consumers are most in need of an understandable labelling system as they are the most common consumers of unhealthy foods and, therefore, are most at risks of developing health problems. This view is supported by Jeffery et al., (2009) who states that the Body Mass Index and depressive symptoms are positively related with the consumption of sweet foods. However, overweight consumers will be the hardest to target as they are the most common habitual consumers of unhealthy foods. According to Wood and Neal (2009), habitual consumers automatically repeat past behaviour with little regard to current goals and valued outcomes. Also, people who are overweight are considered to be less successful in life than their slimmer peers (Overweight women less successful, 2011). These findings illustrate the need to understand personal traits of overweight consumers in an attempt to develop a labelling system understood by all consumers, motivating people to make healthier food choices. The survey will include questions relating to weight locus of control; to determine how much control the person believes they have over their weight and how much of it they believe is due to chance.

Weight locus of control relates to beliefs regarding an individual's personal weight (Saltzer 1982). Rotter (1966) describes Locus of Control (LOC) as the extent to which a person believes in self-determination, and the power they have on their lives through their own actions. An internal is someone who is successful through planning and internal influences. Whereas an

external believes their lives are influenced by chance, fate and outside influences. It is expected that all nutritional labels will have a significant impact on internals, especially with labels relating to physical activity. This is because internals place a high emphasis on body shape (Saltzer, 1982) and understand that weight is controllable, due to the effect of a person's diet and their physical activity (Holt et al. 2001). Therefore, they are likely to trust and accept the information presented to them regarding recommended exercise behaviour associated with consumption. However, externals usually believe people are overweight owing to genetics, and from a lack of support from family and friends (Martin, Veer and Pervan, 2007); therefore, they are not likely to understand or adhere to the information displayed on the nutritional label regarding exercise behaviour.

The aim is to determine personal characteristics of consumers with both, internal and external locus of control. This information will help to understand the association weight locus of control has on lifestyle and consumption choices a key objective of this study.

## 5.0 JUSTIFICATION

The above literature illustrates the importance of front-of-package food labelling (AMA, 2011; Kelly et al., 2004; Sacks et al., 2009; Wandel, 1997). Kelly et al. (2009) states, the placement of nutrition information on the front of food packages provides consumers with simplified and visible nutrition information to aid them into making better food choices. Wandel's (1997) study clearly shows that consumers are in need of a labelling system that is easy to understand, so that ordinary people can attain better knowledge of the food they are considering to buy. In a display of agreement, Kristal et al. (1998) states that an overwhelming 70% of consumers want food labels that they can easily understand. It is evident from these findings, food labels need to be upgraded, in order to make them effective and easier to interpret.

According to Philipson (2005) the causal relationship between food labels and subsequent diet choice is not well understood; thus more research in this area is needed to determine the most effective food labelling choice. This study will use a variety of Information and Image based labels which have not been previously used together in a quantitative study. The aim is to understand the relationship between food labels and consumption behaviour.

## 6.0 HYPOTHESIS

Providing consumers with transparent information on the amount of exercise recommended to burn off a product, is an efficient way to communicate the energy content. A recent study reports those presented with information on the 'length of time they would need to briskly walk' to burn off a product, consumed approximately 100 fewer calories per serve, than participants shown simplistic caloric information (Roberts, 2013). Another study reported similar findings, an average of 200 or fewer calories was ordered by the participants provided with information on the amount of exercise needed to burn the product off (Khamisi, 2013). Both studies gave participants menus that either contained information about calories, exercise time/distance or a combination of calories and exercise information. Khamisi (2013) stated, "people who viewed the menu without nutritional information ordered a meal totalling 1,020 calories; significantly more than the 826 calories ordered by those who viewed menus that included information about walking-distance" (p.1). Making the recommended exercise expenditure of products available is a persuasive eye-opening form of communicating the nutritional value of food and drinks. Findings from this study confirm that many of the participants were alarmed and surprised to discover the recommended energy output required for burning off certain products. According to this study, the information was new for many people as they lacked information on how to understand complex food labels. They considered

this system to be helpful and from the information provided were able to better understand the number of calories in certain food products (Khamisi, 2013). Therefore, putting the total energy content of a product into relatable, simplistic, energy output examples (such as walking time), is an effective way to communicate with consumers who lack the nutritional information and interest required to understand current complex food labels. However, it is predicted consumers who lack Nutritional Knowledge, Nutritional Interest and Nutritional Usage will also partake in low levels of Preventive Health Behaviour and are likely to relate more with the Walking label rather than the Running label. Findings state that an individual's diet and physical activity habits are influenced by their experience and attitude towards these behaviours (National Obesity Observatory, 2011). Therefore, a person who does not regularly partake in Preventive Health Behaviours are likely to relate to and understand the Walking label rather than the Running label. The following hypothesis is proposed:

*H1: The Running label will have a significant negative effect on Attitude Towards the Label and Attitude Towards the Act of high energy dense foods, compared the Walking label only if the participant also reported having a low level of Preventive Health Behaviour.*

A label that displays the amount of exercise recommended burning off a product will be more effective than the Caloric label, at deterring the purchase and consumption of the Unhealthy product. Usually this is true only if the participant claims to take current action in Preventive Health Behaviours. Findings have shown that participants who are not physically active are less likely to stop consuming a product that displays the amount of recommended exercise expenditure needed to burn off the product, than their physically active counterparts. Usually this is because it is difficult to encourage a behavioural change in individuals who does not currently partake in the behaviour. "The health belief model theorises that, in order for



behaviour change to take place, an individual must first believe that change is both possible and beneficial and that the benefits of changing outweigh any perceived costs of making the change” (Nutbeam and Harris, 2004, p.4). Daily routine activities tend to become habitual. Thus, consumers who do not exercise will likely over time begin to repeat their past routine behaviour (not exercising) with little regard to their current goals and valued outcomes (Wood and Neal, 2009). Collier et al. (2010) maintains “Change relies on incentives and personal motivations. Therefore, those participants who do not partake in Preventive Health Behaviours would likely need a more motivating factor than a label showing recommended exercise expenditure to deter them from consuming the product. Understanding and removing barriers and stimulating the correct positive incentives, can result in change” (Collier et al, 2010). Collier concludes that it is easier to influence behaviour change in individuals that are motivated in positive preventive health behaviours. Even if they do not partake in this behaviour regularly, they are still likely to benefit from and modify their behaviour in a positive way because of the exercise label. Therefore, the following hypothesis is proposed:

*H2: The Unhealthy Running label will have a significantly greater effect on a participant's Healthy Behaviour Likelihood and a significant negative effect on Purchase Intention than No label only if the participant also reports having high levels of Preventive Health Behaviour.*

The Heart Foundation Tick is acknowledged throughout New Zealand as a Third Party labelling system, placed on foods which meet certain criteria. It is described as a good system because it is simple, well recognised and proven to work (Signal and Lanumata, 2008). In general, findings state that Tick foods are lower in saturated fat, sodium and added sugar and higher in dietary fibre (Heart Foundation Tick, 2012). Consumers most likely to acknowledge and utilize third party labels (which meet a set health criteria) are those who possess a high

level of health consciousness, value their wellbeing and are highly motivated to be healthy. Similar findings state, “Consumers looking for quick and easy ways to determine healthy food products have an easily recognizable and visible indicator that certain food packages contain healthy food and are approved by a trusted organization” (Graham, Harker, Harker and Tuck, p.42, 1994). Asking participants questions regarding their level of Health Consciousness, Health Motivation and Health Value is likely to be a good determinant of the effectiveness of a Third Party endorsement. However, participants who report high levels of Preventive Health Behaviour are also likely to have a higher understanding of Nutritional Information. Consequently, it is likely that participants who report low levels of Nutritional Knowledge will find the Third Party label less effective than those who report high levels of Nutritional Knowledge. Therefore, the following hypothesis is proposed:

*H3: The Third party label will have a significantly greater effect than the Caloric label in Healthy behaviour likelihood only if the consumer has a high level of Preventive Health Behaviour.*

Research has revealed that the use of images is a stronger method of communication in comparison to all forms of text-based communication Hogben (1949, cited in Veer and Rank, 2012). Therefore, an Image based nutritional label is likely to be more effective than Information based label because an image is more vivid and eye-appealing than text communication. Thus, the participant is more likely to notice and read labels with an image compared to a label without an image. In a study conducted by Veer and Rank (2012) visual images were said to have a greater persuasive impact on attitudes and intentions to quit smoking. It is likely this finding will remain true in this study, therefore, images of a person

running or walking are likely to be more effective than information based labels in encouraging participants to consume healthy food products and avoid unhealthy food products.

Therefore, this study will aim to determine if images on nutritional labels are an effective way in communicating to consumers healthy food choices. Therefore, the following hypothesis is proposed.

*H4: Image based labels (Running and Walking) will have a significant negative effect on Attitude Towards the Product compared to Information based labels (Star and Calories) only if the product is Unhealthy.*

In consideration of the above findings, it is expected that the star system will be more effective than the basic Caloric label. The Star system and the Caloric label are very similar conditions, however, an image of either one or three stars accompanies the caloric information in the Star system. Therefore, it is expected that the Star system will be more effective at encouraging all participants to partake in Healthy Behaviours due to the existence of the image. Therefore, the following is proposed.

*H5: The Star System will have a greater significant effect on a participants Predicted Health Behaviour than simple Caloric labelling only if the product is Unhealthy.*

Broad scopes of studies have reported a positive association between involvement in regular physical activity and higher levels of self-esteem (McAuley, 1994; McAuley, Mihalko and Bane, 1997). However, findings state that the relationship between self-esteem and exercise is only evident in people who place importance on physical activity (McAuley., et al., 1997). Therefore, participants with a high Weight Locus of Control (believe they control their weight)

are more likely to have a higher level of Purchase Intention and a higher Attitude Towards the Product in the Healthy condition than the Unhealthy condition. This view is supported by Marcus, Selby, Niaura and Rossi (1992) who state that participants who are confident their actions are directly associated to their weight are more likely to feel encouraged to exercise. This finding is similar to the social cognition theory which considers the importance of an individual's knowledge and attitudes in influencing their behaviour (MacDowell, Bonnell and Davies, 2006). The health belief model states, an individual must believe that their diet is unhealthy and directly effects their weight before they will change their lifestyle behaviours.

A relationship has also been found to exist between self-efficacy and self-esteem. Sonstroem and Morgan (1989) have proposed a model which suggests changes in self-efficacy are brought about by regular exercise, which has an influence on self-worth. This, in turn, is directly associated with self-esteem. Thus, a participant who reports a low level of self-esteem is also likely to report a low level of self-efficacy. Therefore, these covariates will be included in the statistical analysis. Beacuse of these findings the following hypothesis is proposed:

*H6: Consumers who have a high Weight Locus of Control (believe they control their weight) will have a significantly greater Attitude Towards the Product and Purchase Intention than consumers who have a low Weight Locus of Control only if the product is Healthy.*

Complex, informative food labelling, helps aid health literate consumers into making healthier consumption choices. Consumers who have a healthy lifestyle and partake in Preventive Health Behaviours react better to labels which include an array of nutritional components. According to Burton et al., (1999), comprehensive labels that include fat, sugar and sodium content require prior nutritional knowledge to understand correctly. Although the Traffic Light label is easier to understand than the Daily Intake label, it is predicted to be more difficult to interpret than

simplistic Caloric labels. The Star system, which is currently, a proposed front-of-pack label is expected to be more effective in aiding the less health conscious consumer. Neergaard (2011) states, the Star system, is effective at providing low health literate consumers with the most important information without all the clutter that many nutritional labels include. It is predicted that participants who have a high level of Preventive Health Behaviour, will react better to complex Information based labels, such as the Traffic Light label. Whereas participants who have low levels of Preventive Health Behaviour will react better to simplistic labelling such as the Star system. Therefore, the following hypothesis is proposed.

*H7: The Traffic Light label will have a greater significant effect on the participants Attitude Towards the Act than the Star System only if the participant also has a high level of Preventive Health Behaviour.*

## 6.0 METHOD

### 6.1 Pretesting

A major problem with last year's study was that many participants reported they did not regularly consume the product presented to them on the survey. The two products; chocolate and muesli bars varied significantly in their consumption pattern. Chocolate bar consumption was consistent, with most consumers stating they consumed chocolate bars between 2-4 times a week. Whereas, the consumption of muesli bars varied between daily and less than once a week. This variation in consumption may have had an effect on the overall results.

For this study, a food product will be carefully selected as only one product will be displayed for all manipulations. This will have either a high energy content or low energy content, to represent a Healthy and Unhealthy condition. This will eliminate the discrepancies between the

variations in product consumption of similar product types by providing participants with one consistent product in each 14 manipulations.

Informal, face-to-face, semi-structured interviews were conducted to ensure a commonly consumed food product was used for this study. The interviews included questions relating to the participants eating patterns and behaviours. The following questions were asked:

Do you eat breakfast? Surprisingly, less than 50% of participants claimed to eat breakfast regularly. This low percentage of breakfast consumers was explained and justified by participants due to their time restraints and not being hungry first thing in the morning.

What do you eat for breakfast? Of the regular breakfast eaters, most of them stated they usually had toast or fruit smoothies for breakfast, not cereal. Therefore, cereal which was originally thought to be a commonly consumed food, suitable for this study, will not be used.

Do you snack during meals? Many participants said, they have two or three big meals a day and one smaller meal such as toast, noodles or soup. Snack food consumption varied significantly, and the only commonly reported snack food, was toast and fruit. Therefore, a snack food may not be the best manipulation variable for this study.

Do you eat takeaways? Males confessed to consuming takeaways at least once a week whereas in general, females claimed to consume takeaways less than once a week. Because of this gender difference, takeaway meals will not be used as a variable in this study. Also, takeaways do not always contain the nutritional content of the product and, therefore, displaying this on the products in the questionnaire may bias results.

The informal interviews helped to narrow the selection process down and determined that cereals, snack foods and takeaways were not viable food choices for this study. The food product needs to have a nutritional content which is known to alter and can, therefore, be

perceived as both Healthy and Unhealthy depending on the nutritional label. The idea of placing nutritional labels on recipes is a viable one; however, this assumes that the participant regularly cooks meals, an assumption that cannot be made. Another possible option is soup. Soup alters greatly in nutritional content, it can be eaten as lunch, dinner, or as a light meal, it is easy to prepare, gender neutral and has nutritional labels on it, and thus, a viable choice for this experiment. More research and pre-testing will be conducted to determine which product will be the most suitable for the survey.

These results helped to determine what questions to put in the next pre-test, which was conducted on a larger scale. The survey recruited a total of 60 participants online via convenience sampling, through Facebook using Qualtrics software. This survey asked participants to rank sandwiches, canned soup, cereal, crackers and yoghurt in order from which product they consumed the most of, which they perceived as the healthiest and which product they believed varied the most in nutritional content. Cereal and crackers were also included to ensure that findings from the previous questionnaire were accurate and that they were not viable manipulation choices for this study. Findings showed that sandwiches were significantly most popular; thus a pre-packaged sandwich will be used in this experiment. Other questions relating to lifestyle behaviours were also asked to gauge an idea on participants' habits. As a result, it was evident that another pre-test would need to be conducted in order to gauge an idea of sandwich preference.

A range of the most common sandwich fillings were given to participants to select from and ranked in order of what they would most regularly consume, what they perceive as the healthiest and what they considered varying the most in nutritional content. A total of 42 participants completed the survey which was distributed online using Qualtrics software via convenience sampling, through Facebook as the method of recruitment. A chicken salad sandwich was found to be the most popular filling type and the most adaptable in terms of

nutritional content. It was also ranked second in terms of perceived healthiness. The most popular bread type was multi-grain which will be used in the sandwich. Therefore, a chicken salad sandwich on multi-grain bread will be the product presented to participants in this study.

## 6.2 *Participants*

Central limit theory suggests a minimum of 30 participants for each survey (Adams, 2000). To account for invalid surveys, the aim will be to get 50 participants for each. A Healthy Sandwich and an Unhealthy sandwich will be used for each variable. These include, No front-of-package label, the Daily Intake label, Caloric labelling, Traffic Light labelling, the Star system, Running label, Walking label and the Third Party endorsement, which require a total of 700 participants.

In order to distribute the survey effectively between different demographics, the mode of survey distribution needs to be carefully planned. There are a number of online survey sites which distribute surveys to a specific panel of willing participants. These participants must meet the researcher's specific demographic requirements. This method of distribution would be the most effective at gaining participants with a wide variety of different demographics. Qualtrics and Survey Monkey are both popular and well recognised survey distributors. Both sites were contacted once the survey was ready to be distributed in order to get an official quote of how much these survey distributors would charge. With a significant discount Qualtrics quoted \$10.50 per completed survey. Because of the high number participants required for this study (700), this method of survey distribution would cost \$7,350 (700X \$10.50). This price is significantly higher than the budget and subsequently is not a viable method of distribution for this study. Survey Monkey also quoted a price over the budget, for a scope of 700 panellists it was predicted to cost between \$5,250- \$7,500. Both of these survey distributors would not be viable options for this study.



Mechanical Turk is an American site which allows researchers to place their surveys online and pays willing participants to complete them. The researcher gets to decide the price to pay/reward the participants which can be as low as a few cents (in some cases nothing). This method allows researchers to create a survey on a separate site such as Qualtrics and copy the link over to Mechanical Turk to assist with the distribution. This method is a more than viable option, which requires minimal funding to obtain a wide distribution of participants.

An issue with this mode of distribution is that the study will not be able to limit participation only to participants who are from New Zealand. As this site is American, it is likely a large proportion of participants completing the survey are from America and there is no real advantage to preventing these responses.

A range of distribution modes will be used to ensure a variation of responses is collected from countries in the developed world. To attract younger participant's, high schools will be directly contacted and asked for permission to access their year 12 and 13 students. Morrisville College and Rathekeale College have an estimated total of 300 students in both these year groups. I will aim target 50% of these age groups to obtain a total of 150 participants via this mode of distribution. To gain approval from ethics, the school board needs to agree to this. Once approval is obtained from the school, permission slips will be sent home to the students' parents stating the purpose of the study. A separate link was provided to the parents to complete the survey themselves. Once the permission slips are returned to class, a computer room will be booked out for students to complete the survey.

### *6.3 Procedure*

This study will use a 2 (nutritional level: healthy, unhealthy) X 7 (labelling system: traffic light, star, exercise time, exercise distance, daily intake guide, caloric, third party) between-subject, experimental design. The participants will be obtained via convenience sampling. The survey

will be distributed and completed online using a between-subject design. Each participant will be randomly assigned to a single labelling system with either a healthy product or an unhealthy product, to determine which system is the most effective in aiding consumers to make a healthier food choice. A control group will receive no front-of-package label to determine the effectiveness of each label design. There will be fourteen different surveys which contain exactly the same questions; only the picture of the product and the labelling system will be altered. These surveys will all be pre-tested to ensure the questions are interpreted correctly before the 700 surveys are dispersed.

## 7.0 MANIPULATIONS

### 7.1 *Nutritional label design*

This experiment will ensure the 14 surveys are consistent; only the nutritional label on the product will be manipulated. Because the same picture will be depicting both a Healthy and Unhealthy product, it is important the product selected for the survey can be easily altered in nutritional value to ensure both conditions portray a believable nutritional label. The pre-tests conducted conclude that chicken salad sandwiches were perceived to alter the greatest in nutritional value. They were also found to be the most highly consumed sandwich filling. Because of these findings, a chicken salad sandwich will be the manipulated food product presented to participants in this experiment.

The below tables illustrate the nutritional values of pre-existing chicken salad sandwiches available from a range of stores.

Table I. Healthy Chicken Salad Sandwich Nutritional Information

	Calories	Fat	Sat fat	carbs	Protein	sodium	Sugar
Chicken Salad Sandwich on Wholegrain Bread	298	9.2g	2g	26g	26.7g	376 mg	5g
Chicken Salad Sandwich	270	10g	2g	29g	15g	540mg	3g
Roast Chicken Salad Sandwich	248	4.7g	4g	39.5g	19.7g	360mg	3g
Light Chicken Salad Sandwich	300	4.2g	1g	38g	18.7g	1300mg	3g
Sandwich With Chicken, Lettuce / Tomatoes, 1 Slice Cheese and Salad Dressing	292	9g	4g	32g	23g	1415mg	3g
Average	280	7.4g	2.6g	32.9g	20.6g	798mg	3.4g

(My Fitness Pal, 2013)

Table II. Unhealthy Chicken Salad Sandwich Nutritional Information

	Calories	Fat	Sat Fat	Carbs	Protein	Sodium	Sugar
Chicken Salad Sandwich	640	38g	10g	46g	29g	1650mg	4g
Chicken Salad Sandwich on Wheat- Lettuce, Tomato, Onion, Pepper.	640	31g	8g	58g	38g	1174mg	5g
Harvest Chicken Salad Sandwich	530	17g	3g	59g	33g	730mg	7g
Chicken Salad Sandwich	498	21g	3g	55g	26g	940mg	6g
Chick-Fil-A Chicken Salad Sandwich	510	19g	4g	55g	28g	1120mg	12g
Average	564 calories	25.4g	5.4g	54.6g	30.8g	1123mg	6.8g

(Calorie Count, 2013)

This information shows that Unhealthy chicken salad sandwiches have approximately doubled in the amount of calories than Healthy chicken salad sandwiches. The fat content of Unhealthy chicken salad sandwiches is more than double that of a Healthy sandwich. However, both carbs and protein in the Healthy sandwiches were higher than predicted. By examining the nutrition information of both Healthy and Unhealthy sandwiches, it is evident that the fat content is the biggest determinant in calorie variation, in the sandwiches. Anders (2013) maintains that fat has the most calorie per gram this explains the major variation in calories between the Healthy and the Unhealthy sandwich. This information will create the daily intake guide for this experiment. It will also be used to generate an accurate Traffic Light label and Star label for both the Healthy and Unhealthy conditions.

## *7.2 Caloric labelling*

Through examining the nutritional content of pre-existing sandwiches, an Unhealthy chicken salad sandwich is on average 560 calories. This figure will be altered slightly to 564 calories to appear specific to the product and more believable than a rounded figure. The Healthy chicken salad sandwich was calculated to be 280 calories. This figure will be altered to 282 calories to equal half that of an Unhealthy chicken salad sandwich. This figure also appears more accurate than a rounded figure and, therefore, portrays a believable calculation. Caloric labelling will simply state these figures clearly on the sandwich package. It will either read, “This product contains 282 calories” or “This product contains 564 calories”.

### *7.3 Star system*

To determine how many stars would be displayed on each sandwich the percentage of daily intakes were added together. When comparing the nutritional component of the Healthy sandwich to other pre-existing sandwiches, the Healthy sandwich is a good healthy choice. It is not very high in any negative nutritional components; therefore it will be rewarded the full three stars. However, the Unhealthy sandwich contains many high negative nutritional components. Thus, it will only receive one star.

### *7.4 Third Party Endorsement*

A Third Party label was developed to give consumers the perception the product is healthy and approved by an organisation which promotes healthy eating. The label will portray a similar image to the Heart Foundation Tick but will not be affiliated to the brand. A tick will be the symbol for this Third Party endorsement as it depicts a positive image, which is likely to reinforce consumers that they are making a healthy food choice that is good for them. The colours of this brand will be green and blue. Findings have shown these colours are associated to health and nature (Barimen, 2004).

### *7.5 Daily Intake label*

The recommended daily intake values were calculated by using the mean of each nutritional component from five sandwiches with the pre-existing nutritional values. These averages in grams of both the Healthy and Unhealthy nutrient components were compared to the recommended daily nutritional guideline. The daily percentage of the nutritional components

was calculated for each sandwich based on a diet of 8,700 kilojoule/2,080 calories (My Daily Intake, 2013).

Table III. Daily Intake

<b>Nutrient</b>	<b>Quantity Per Day</b>	<b>Quantity per healthy sandwich</b>	<b>Recommended Daily %</b>	<b>Quantity per unhealthy sandwich</b>	<b>Recommended Daily %</b>
<b>Energy</b>	8,700 kilojoules	1,180 kilojoules	13%	2,320	27%
<b>Protein</b>	56 grams	20.6g	36.4%	30.8 g	54.35%
<b>Fat</b>	70 grams	7.4g	10%	25.4 grams	35%
<b>Carbohydrates</b>	310 grams	32.9g	10%	54.6g	17%
<b>Sugars</b>	90 grams	3.4g	3.7%	6.8g	7.4%
<b>Sodium (salt)</b>	2.7 grams	798mg	29%	1123mg	40%
<b>Saturated Fatty Acids</b>	24 grams	2.6g	10%	5.4g	22%

## 7.6 Exercise labelling

A pre-test was conducted to determine which statement associated to exercise expenditure was most likely to deter people from consuming a high energy food product. The following statements were included in this survey: "30 minutes of running is required to burn off this product", "you will need to run for 5 kilometres to burn off this product", "45 minutes of jogging is required to burn off this product", "you will need to jog for 6 kilometres to burn off

this product", "60 minutes of brisk walking is required to burn off this product", "you will need to briskly walk for 6 kilometres to burn off this product".

In this pre-test participants were asked to rank in order, which statements deterred them the most. Running was the least favourable activity and the highest deterrent. Also, exercise time was more effective than exercise distance. Therefore, the statement "30 minutes of running is required to burn off this product" was the most effective at deterring a consumer from the unhealthy product. An issue with this statement is that many consumers do not run and, therefore, the statement does not relate to the consumer personally. Research states that in order to influence behaviour change a consumer's attitude and their attitude to change needs to be well understood (Vinson, Scott and Lamont, 1977). Briskly walking is a more common form of exercise and is associated to a more positive attitude. Thus, another manipulation will be created. This will state the amount of time needed to briskly walk for to burn off the product – "60 minutes of brisk walking is required to burn off this product."

These statements in the pre-test were only estimates of time and distance required to burn off the products. According to Fisher (2010) Body mass (size) and workout intensity (speed) directly affect the number of calories a person uses during a run. In order to calculate the amount of exercise required to burn off the sandwiches, a proper equation was derived. To make this conversion as precise as possible the energy expenditure was calculated based on average figures.

Essentially, the higher your heart rate during physical activity, the more calories will be burnt, so how long it takes you to burn off the calories in the sandwich will depend on how much effort you put into the exercise (Schwartz, 2013). In accordance with this Fisher (2010) states, runners burn more calories as they go faster, although this is not proportionate. For example, a

150-pound person running for 30 minutes burns 288 calories at 5 mph but 450 calories at 10 mph. The speed is twice as quick however they do not burn double the calories.

Firstly, the average predicted speed of runner and a brisk walker was calculated. Bumgardner (2012) states that brisk walking is classified as moderate intensity and for a person to be walking briskly they need to be breathing harder than usual at moderate excursion. To put a person into moderate exertion, the average pace they are likely to briskly walk at is 6 kilometres per hour. Davidson (2011) states that the average pace of a jogger is around 8 kilometres an hour and (Phil 2006) states the average pace of a runner is around 10 kilometres per hour.

The weight of a person also directly affects the amount of calories burned per minute. A 100-pound person running for 30 minutes at 5 mph burns just 192 calories, while a 200-pound person burns 384 calories. “This variation is because smaller people do not have the same body mass, therefore, ability, to burn an equal amount of calories as a larger person with all other variables constant” (Fisher, 2010, p.1). Findings state that the average person weighs around 75 kilograms Davidson (2011). Therefore, the nutritional label will estimate calories burned per minute based on a 75 kilogram person running at a pace of 10 kilometres per hour.

### Running label

Mackenzie (2002) estimates that a 75 kilogram person running at a pace of 10 kilometres an hour burns on average 12.2 calories a minute. Hence the Unhealthy sandwich which contains 564 calories, would require the consumer to run for approximately 46 minutes to burn off the product ( $564/12.2=46$ ). The following statement will be on the Unhealthy sandwich “46 minutes of running is required to burn off this product” This figure was simply halved to calculate the time needed to burn off the Healthy sandwich. The following statement will be on the healthy sandwich “23 minutes of running is required to burn off this product”



### *Walking label*

In order to estimate the time a person would need to briskly walk for to burn off the Healthy sandwich, the same equation was applied. Mackenzie (2002) estimates that a 75 kilogram person briskly walking at a pace of 6 kilometres per hour burns approximately 5.5 calories per minute. Therefore, they would need to briskly walk for approximately 1 hour, and 42 minutes to burn off the product ( $564/5.5 = 102$ ). The following statement will be on the unhealthy sandwich "1 hour and 42 minutes of brisk walking is required to burn off this product". This figure was halved to calculate the distance needed to burn off the Healthy sandwich. The following statement will be on the Healthy sandwich "51 minutes of brisk walking is required to burn off this product".

### *7.7 Traffic Light labels*

To determine what colour each nutritional component would be (red, amber or green depending on how many grams the product contained) a variety of pre-existing Traffic Light labels were evaluated. Because the Unhealthy sandwich contained a high amount of saturated fat, this nutritional component will be coloured red. The Healthy sandwich contained a low amount of saturated fat and will be coloured green. Medium amounts of fats and calories are reported for the Unhealthy sandwich. These will be coloured amber, but low amounts are reported for the Healthy sandwich which will be coloured green. Both Healthy and Unhealthy sandwiches contain low amounts of sugar and, therefore, will be coloured green; however, both sandwiches have high amounts of sodium with the Unhealthy sandwich containing slightly higher levels than the Healthy sandwich and will be coloured red and amber respectively.

### *7.8 Product Design*

To maximize internal validity of the stimuli, an actual sandwich was photographed and used for all 14 nutritional label manipulations. The sandwich was crafted personally in order to

maintain an image of a universal chicken salad sandwich on multigrain bread. The standard ingredients used for this sandwich include chicken, lettuce, tomato, carrot, cheese and mayonnaise. Additional fillings such as avocado and cranberry were left out of the sandwich as they are not considered generic fillings. If these were included, they could have an effect on the overall results. The sandwich was placed in a plastic sandwich container to depict that of a store bought, pre-packaged sandwich. This allowed the variable to maintain an image of a universally available product. It also creates the perception of value and quality as participants can most likely associate this product to a similar one, available from their local café or store.

The brand, The Sandwich Co, was designed to be simplistic whilst creating the image of a prestigious, high quality brand. Colours, symbols and wording, were carefully considered. The colours gold, white and black were used in the logo as they are said to represent luxury items and are often used to enhance the feeling of quality and sophistication (The Economic Times magazine, 2012). A diamond is suggested to represent, strength, professionalism, balance and efficiency (Creativebloq, 2013). Therefore, this logo shape helps enforce the image of prestige and quality. The words “The Sandwich Co” were kept simplistic and neutral to ensure the brand logo does not stand out too much and effect participant’s perceptions of the product.

## *7.9 Testing Manipulations*

The manipulations were created using Photoshop software. To ensure all manipulations were as consistent as possible everything was identical except for the nutritional label. The placement and sizing of this label was kept accurate, and similar within all manipulations, therefore, the only variable in this study was the nutritional label itself. Once the pictures were believable they were printed out and shown to 20 people to ensure that each product depicted a believable packaged chicken salad sandwich. Participants reported that the brand depicted a real, positive, prestigious image that they would consider buying. This analysis revealed that

most of the nutritional labels accurately portrayed a store bought chicken salad sandwich. The most believable nutritional labels were the Daily Intake Guide, Caloric labelling and the Star system. Most people explained this was because they were not familiar with the other nutritional labels. Because participants had the opportunity to look at all of the labels together, they were able to compare these labels side by side. This method was not representative of the actual study. Because the study only shows each participant one of 14 manipulations, they will be unable to compare the labels and are unlikely to notice the nutritional label as much as these participants in this discussion. From this small unstructured qualitative interview, I am confident the manipulations are believable and depict that of a store bought sandwich.

## 8.0 MEASURES

### 8.1 *Dependent variables*

**Attitude Toward the Act (ATA):** of consuming a food item will assess a person's attitude about eating the sandwich presented to them on the survey. It will help to gauge the cognitive aspect of the participant's desire for consuming the particular food product. This scale was first used by Shiv and Fedorikhin (1999) and was later modified by Fitzsimons and Shiv (2001). This scale was previously used in experiments with two snacks (chocolate cake and fruit salad) as a measure of the cognitive aspect of one's desire for the snack. Both studies reported Alphas above .80, therefore, the scale is considered reliable (Fitzsimons and Shiv (2001)). The scale items will be measured on a seven statement seven-point Likert scale and will include the following; Consuming this food products is: harmful/beneficial, not good for my health/good for my health, a foolish choice/a wise choice, useless/useful, bad/good, likely to make me feel guilty/likely to make me feel good, likely to encourage me to exercise/likely to not encourage me to exercise. The scale originally consisted of five statements however, two extra statements

were added to the pre-existing scale - consuming this food product is: likely to make me feel guilty/likely to make me feel good and likely to encourage me to exercise/likely to not influence exercise behaviour. These statements will help to get a better understanding of the participants' perception of the product presented to them and their attitude toward consuming it. Last year label type had a significant effect on participants responses to the likelihood of feeling guilty and likelihood to exercise. This provides useful information into understanding consumption choices relating to a particular food product. This multi-item scale is likely to provide more reliable data and help better understand consumption behaviour associated with label type.

**Attitude Towards the Product (ATP):** Will be used to assess the participants' attitude towards the particular food product. It will help to determine if the nutritional label and the chicken salad sandwich have an effect on overall responses. This scale was first used by Arias-Bolzmann (2000). Their findings reported high Alpha levels of 0.96 and 0.94 which reflect a reliable scale. Bruner (2005) stated that the scale was most effective when evaluating food and beverages within an advertisement. However, it is hoped to still be successful when only the picture of a food item is shown. The scale items will be measured on a seven statement seven-point Likert scale displaying the following; I feel this product is- pleasant/unpleasant, satisfactory/unsatisfactory, positive/negative, tasty/tasteless exciting/dull, expensive/not expensive, good/bad. Four statements were removed from the original scale as the information was irrelevant for this study.

**Attitude Towards the Label (ATL):** Is a three-item, seven-point Likert scale measuring the self-reported likelihood that a consumer will purchase a product based upon the information they have read on the products' package (Bruner et.al, 2005). This scale was first developed by Burton, Garretson and Valliquette in 1999 when conducting an experiment on nutritional information panels. An Alpha of .89 was reported for this study which represents a reliable scale. The scale includes the following questions: Would you be more likely to or less likely to

purchase this product, given the information shown on the package? More likely/ Less likely. Given the information shown on the front of the package, how probable is it that you would consider the purchase of the product? Very probable/ Not probable. How likely would you purchase the product given the information shown on the front of the package? Very likely/ Very unlikely (Burton et al.,1999). This scale is directly associated towards the participants perceptions of the nutritional labels and will provide useful information into the effectiveness of each label on both high and low caloric food items.

**Purchase Intention (PurchInt):** Will measure how inclined the customer is to purchasing the particular product. This will be measured on a two statement seven- point Likert scale ranging from 1 very unlikely to 7 very likely. The scale items will include the following: How likely are you to purchase this item or a similar item? How likely are you to recommend this product or a similar product to a friend? This scale item was introduced by Burton, Garretson and Velliquette (1999). A reliability scale of 0.89 was reported for these three scale item, thus representing a usable scale.

**Price (Internal Reference):** Will measure how different labels affect the overall quality perception of a product. The scale is comprised of two items intended to measure the price a consumer mentally links to a specific product. This scale originated in 1989 by Urbany, Bearden and Weibaker. It was later adapted by Grewal et al., (1998) who reported a reliability scale of .97. This scale was adapted slightly by giving participants summated rating scale. Participants will be asked how much they Expect to pay for the product and how much they would Actually pay for the product.

**Preventive Health behaviours (PHB):** This will be used as both a dependent variable and a covariate. It will measure the extent to which a person engages in frequent activities related to maintaining a good health. It is predicted that the level of Preventive Health Behaviour will

have a direct effect on responses to the nutritional labels. The thirteen statement, seven-point Likert scale, will range from 1 very rarely to 5 very often. Participants will be asked, how often do you undertake the following activities? Eat a well-balanced diet, Eat fresh fruit and vegetables, Reduce the amount of salt in your diet, Watch for salt content in your diet, Exercise regularly, Watch the amount of fat you consume, Pay attention to you sugar intake, Pay attention to the amount of red meat you eat, Cut back on snacks and treats, Avoid foods with additives and preservatives, Get enough rest and sleep, Reduce stress and anxiety, Pay attention to the amount of alcohol you drink. This scale was created by Moorman and Matulich (1993) and later adapted by Jayanti and Burns (1998) who reported the scale was reliable with an Alpha of .81. The scale consisted of seventeen statements, however, seven statements were removed from the scale as the information was irrelevant for this study. The scale will help to gauge an idea of the behaviours the participant is currently engaging in and if it has an effect on consumers perceptions towards different labels.

## *8.0 Covariates*

Personal demographics that are likely to be related to the preference of the food label will be collected. These are covariates which are often useful in explaining some of the variability and help to reduce the residual error in the analysis of variance (Moon, 2010). These covariates included **Gender, Age, Ethnicity, Occupation, Income and Country of Residence**.

Participants were required to tick their gender and state their age in years. To determine ethnicity, the participants were given the ten most common ethnicity brackets, these were NZ European, Maori, Pacific Nations, American, Asian, Indian and European other was an option where participants were able to type their ethnicity (Statistics New Zealand). Participants were all asked to state their profession and circle their income bracket which ranged from less than

\$5,000, \$5,000-\$30,000, 31,000- \$50,000, 51,000-\$70,000, \$70,000-\$100,000, more than \$100,000. (Statistics New Zealand). Some variables were altered slightly for the purpose of the study as people from outside New Zealand were expected to participate in this study too.

## **Health**

To determine how involved in health and nutrition the participant is they will be asked a range of questions from multi-item scales. These questions will be used to measure the participant's level of Health Consciousness, level of Health Knowledge, level of Health Motivation and level of Health Value along with how frequently the participant engages in Preventive Health Behaviours.

**Health Consciousness (HlthC):** Will be determined by four, seven- point Likert type items which will seek to measure, how concerned and sensitive participants are about health issues and if this effects their overall consumption choices (Bruner et al., 2005). The questions will include the following: I usually read the ingredients on food labels, I read more health related articles then I did three years ago, I am interested in information about my health, I am concerned about my health all the time. These scale items will range from 1 strongly disagree to 7 strongly agree. This scale was originally created by Kraft and Goodell's, (1993) and later adapted by Jayanti and Burns (1998). For this survey, two of the questions did not relate to this experiment and, therefore, were left out of the survey.

**Health Knowledge (HlthK):** Questions relating to how health knowledgeable a participant is will be used to measure the level of familiarity a person states as having about preventive health care behaviours. These statements will be measured on a three statement seven-point Likert scale ranging from 1 strongly agree to 7 strongly disagree. It will include the following questions: I am very knowledgeable about taking care of my general health compared to the average person, I am familiar with preventing minor and temporary problems such as colds and

viruses, I am familiar with preventing major and chronic problems such as hypertension and diabetes. Two statements were removed from this scale as they did not provide useful information for this study. This scale was first established and used by Jayani and Burns (1998) who reported an alpha of .86, which represents a reliable scale.

**Health Motivation (HlthM):** Is intended to measure the degree to which people say they are concerned about health hazards and try to take actions to protect themselves before the problems occur. The participants will be asked to agree or disagree with the statements presented to them. This ten statement seven-point Likert scale was first created by Moorman and Christine (1990) and was later adapted by Mooreman and Matulich (1993) and Jayanti and Burns (1998) who reported Alphas of .76, .80 and .82 respectively. It includes the following questions: I try to prevent health problems before I feel any symptoms, I am concerned about health hazards and try to take action to prevent them, There are so many things that can hurt you these days, I am not going to worry about them, I do not take any action about health problems I hear about until I have a problem, I would rather enjoy my life than try to make sure I am not exposing myself to a health hazard, I do not think health hazards I hear about will happen to me. This scale originally consisted of 10 items; however, 3 items were removed as they were not necessary for this study. This multi item scale will determine if a consumer who takes actions to prevent health problems is more likely to consume healthier food. It will also determine if they are more able to recognise warning labels on food products compared to a consumer who has a low level of health motivation.

**Health Value (HlthV):** will be composed of five, seven-point Likert items, to assess a participant's attitude towards the costs/benefits of engaging in preventive health care behaviour (Bruner, et al, 2005). This scale originated in 1998 by Jayanti and Burns who created the scale for a study which examined health care behaviours. An Alpha of .91 was reported which is



recognised as a reliable scale. It includes questions relating to the following: avoid tension, stay healthy longer, enjoy life more, stay fit longer and look younger.

**Nutritional Information Interest (NII):** A seven item seven-point Likert scale will be used to assess the participant's nutritional information interest and their desire to receive and process nutritional information about food products. This scale will include the following statements, which participants will be required to agree or disagree with; I want to know more about nutritional information, I wish nutritional information were more widely available, I enjoy reading about nutritional information, I am interested in looking for nutritional information on labels, I wish nutritional information was easier to understand, If nutritional information was easier to understand I would read it more often. This scale originated from (Moorman in 1990 and was adapted again by Moorman in 1998. A reliability score of .91 was reported in the 1998 study. This scale has been adapted slightly for this study to collect more purposeful data.

**Nutritional Information Usage (NIU):** Will be determined by a five-item, seven point Likert scale and will measure the degree to which people say they have interest in and partake in activities which indicate concern about nutritional information on food packaging. These items include will include the following statements: In general, how often do you read nutritional labels/ the nutritional facts panel that reports nutrient information on food product packages- not often/very often. How frequently do you pick alternative healthier products? Never/Very Often, How frequently do you compare food products based on their nutritional information? Never/ Very Often, In general, how interested are you in reading nutritional and health-related information at the grocery store – not interested/very interested. Generally, how often/frequently do you read nutritional labels at the grocery store/on packaged foods? – Not frequently at all/ very frequently. The scale was first established in 1990 by Mooreman and was altered slightly by Burton et al, (1999). Both studies reported high Alphas of .94 and .92

respectively; therefore the scale is reliable for this study. For the purpose of this study, the scale items were worded similarly so that the same scale could be used for every statement.

**Nutritional Information Usage (NIU):** A scale to determine Nutritional Information Usage will be composed of four seven-point Likert type statements measuring the extent to which a person spends time and effort reading nutritional information from sources such as food labels, advertisements, books and magazines (Bruner et al, 2005). The scale ranges from disagree to strongly agree and will include the following statements: I usually pay attention to nutritional information when I see it in an advertisement or elsewhere, I use nutritional information on the label when making most of my food selections, I do not spend much time in the supermarket reading nutritional information (r), I read about nutrition online, in magazines and books. The scale was first created and used by Mooreman and Christine in 1998 where an Alpha of .71 was reported. Because of this relatively low Alpha score the scale will look to be adapted slightly by rewording the statements (p.375).

**Nutritional Knowledge Objective (NKO):** The scale is composed of seven objective statements intended to measure one's understanding of some basic information about human nutrition. A similar scale was first created by Andrews, Netemeyer and Burton in 1998. However, the questions have been modified slightly to fit the purpose of this study. The following multiple choice questions will be presented to participants:

1. On average, how many calories should the average consumer consume a day according to the daily intake guide found on food products?

- 2100calories
- 2600calories
- 1800 calories
- 3000 calories

2. If you ran at an average speed of 10km an hour for an hour, on average how many calories would you burn?

- 300 calories
- 600 calories
- 450 calories
- 750 calories

3. Nutritional guidelines suggest that no more than \_\_\_\_\_per cent of calories per day should come from fat.

- 20%
- 30%
- 40%
- 10%

4. How many calories are in 720kj?

- 230 calories
- 170 calories
- 110 calories
- 290 calories

5. How long would you expect to have to walk at an average pace of 6km per hour to burn off a 355ml can of cola?

- 90 minutes
- 40 minutes
- 20minutes

- 10 minutes
6. If you eat 2000 calories a day, your daily saturated fat intake should be less than how many grams?
- 20 grams
  - 50 grams
  - 120 grams
  - 35grams
7. Risk of higher blood pressure is most likely to be reduced by eating a diet with \_\_\_\_\_
- Less salt
  - Less fat
  - Less sugar
  - More sugar

To determine if participants were guessing or actually knew the right answer a confidence scale was placed at the end of these questions. The scale bar will range from 1 to 100 and participants will select the numeric value which represents their overall confidence level after answering the questions. This concept was introduced by Adams (1957) and later adapted by Oskamp (1965). Due to the range in scales of measuring one's level of confidence a basic drag scale bar will be used as this is the most simplistic, fastest and understandable way of measuring the level of confidence.

**Nutritional Information Knowledge (NIK):** The scale is a three item, seven point global self-reported measure of one's perceived understanding of nutrition. It includes the following, In general, how much do you think you know about the topic of nutrition- not at all knowledgeable/ extremely knowledgeable. I do not really know very much about nutrition in

general (r) strongly disagree, strongly agree. Compared to most people, I am quite knowledgeable about nutrition- strongly disagree, strongly agree. This scale was created by Burton et al. (2001), for a study on nutritional information panels. An Alpha of .87 was reported which represents a reliable scale.

**Weight locus of control (WLOC):** Is a four statement seven-point Likert scale used to measure expectancies for the locus of control in order to predict behaviours associated with weight. According to Saltzer (1982), weight locus of control (WLOC) is a determinant of consumption behaviour. This information can be used to help explain and predict certain behaviours related to weight gain and weight loss. This variable will be used to find if there is a relationship between consumers who believe they cannot control their weight. As well as determine the behaviour associated with consumption, such as exercise and feelings of guilt. The scale was used by Saltzer (1982) and contains the following statements: Whether I gain, loose, or maintain my weight is entirely up to me, Being the right weight is largely a matter of good fortune (r), No matter what I intend to do, whether I gain or lose weight or stay the same, it just happens (r), If I eat properly and get enough exercise and rest I can control my weight in the way I desire.

**Self-efficacy (SEff):** Was composed of five, seven- point Likert type items. This scale was first developed by Jayanti and Burns (1998) and was intended to measure a person's beliefs that, engaging in specific behaviours, will mitigate health threats. This study reported an Alpha of .79 (Bruner et al., 2005). The scale includes the following statements: I can avoid common health problems by reducing my sodium intake, I can stay healthy longer by getting enough rest and sleep now, regular exercise helps me to avoid common health problems later in life (Jayanti and Burns 1998).

**Self-esteem (SE):** Will be measured on a ten item, seven-point Likert scale measuring the degree to which one approves of one's self. It does not necessarily imply that a person scoring high considers him/herself to be perfect or superior to others (Bruner et al., 2005). These scale items include the following: On a whole I am satisfied with myself (r), I feel that I have a number of good qualities (r), I am able to do things as well as most other people (r), I certainly feel useless at times, I wish I could have more respect for myself, All in all, I am inclined to feel that I am a failure. The Scale was first developed by Rosenberg (1965) who reported Alpha scores above .8 and has been used in many studies since. This scale was adapted slightly for the purpose of this study by removing irrelevant items from the scale.

**Self-esteem State (SES):** Will be used to measure a person's sense of self-esteem at a specific point in time. Thus, this is a measure of the person's self-esteem rather than a more stable personality trait (Bruner et al., 2005). This scale was originally composed of twenty statements; however, only ten of these statements applied to this study. The ten, seven-point statements include the following: I feel satisfied with my behaviour right now. I feel dissatisfied about my weight. I feel self-conscious (r). I feel displeased with myself (r). I feel good about myself. I am pleased with my appearance right now. I feel unattractive (r). I feel concerned about the impression I am making (r). I feel like I am not doing well (r). I am worried about looking foolish. An Alpha of .89 was reported for the scale by Bearden, Hardest and Rose (2001) who adapted the scale which originated in 1991 by Heatherton and Polivy. Pleasure/Mood State

**(Pleasure):** Will be measured on a multi-item, semantic differential scale, measuring a particular state of feeling at a particular point in time on a basic good/bad continuum (Bruner et al., 2005). They will be asked "How do you feel right now". Participants moods will be assess using the following scale items, Sad/Happy, Bad Mood/Good Mood, Irritable/Pleased, and Depressed/Cheerful. This scale was used by Swinyard (1993) and is used in many studies still. All of these studies have reported Alpha scores above .90 which represents a reliable scale.

The scale will be used to help gauge the participants mood and if their lifestyle habits such as exercise and eating behaviours affect their mood.

**Daily Positive Behaviour Likelihood (DPBL):** This semantic differential scale measures the stated inclination of a person to engage in a specific behaviour. The scale will include the following Today the likelihood I will: Exercise, consume takeaways, cook, eat 5+ fruit and veg, snack during meals, eat breakfast lunch and dinner, consume healthy meals, take supplements and count the calories I consume. This scale was developed by Moorman and Matulich (1993) and later modified by Jayanti and Burns (1998) for which a reliability scale of 0.81 was recalled. This variable originally consisted of seventeen scale items but was adapted slightly for the purpose of this study.

**Healthy Positive Behaviour Frequency (HPBF):** Will be used to assess how often a participant partakes in healthy behaviours. It will consist of the following questions: For your main meal of the day, do you usually prepare the food from fresh? On a daily based do you eat the recommended amount of 5 pieces of fruit or vegetables? Do you take any supplements or vitamins to enhance your diet? When purchasing food, do you check the nutritional value of the food? Do you consider yourself to eat healthily? This scale originated in 1998 by Jayanti and Burns.

**Preventive Health Behaviour Action (PHBA):** Will be measured on a fourteen statement seven- point Likert scale ranging from strongly disagree to strongly agree. This scale will be used to assess the participant current eating behaviours and whether they have an effect on their responses. Participants will be asked to agree or disagree with the following statements: If I eat a larger than usual lunch, I will skip supper, I am very conscious of how much fat is in the food I eat, I use low-fat food products, I carefully watch the portion sizes of my foods, I choose healthy foods to prevent heart disease, If I am busy, I will eat a snack instead of eat lunch, I

sometimes snack even when I am not hungry, I eat out because it is more convenient than eating at home, I hate to cook, If I do not feel hungry, I will skip a meal even if it is time to eat, When choosing fast food, I pick a place that offers healthy foods, I eat at a fast food restaurant at least three times a week, I usually eat until I feel full, I usually eat until I finish the food on my plate. This scale was created by Williams and Christensen (2002), however, was adapted to suit this study by removing questions which appear irrelevant.

**Emotional Eating Behaviour (EEB):** Emotions connected to eating behaviours will be measured on a six statement seven point Likert scale ranging from 1 strongly disagree to 5 strongly agree. It will include the following: My emotions affect what and how much I eat, I eat for comfort, I eat when I am upset, When I am in a bad mood I eat whatever I feel like eating, When I am upset I tend to stop eating (r). If I am bored I will snack more. This scale was used in a survey conducted by Williams and Christensen (2002), to determine how much a participant's emotion affects their eating behaviours. This scale will help provide insight into particular consumption behaviours associated with other covariates.

**Price Consciousness (Price):** Three seven-point Likert statements will be used to measure a consumer's stated tendency to make product purchase decisions which are influenced by price. This scale was developed by Lichtenstein, Bloch and Black in 1988 with a reported reliability scale of .66. The scale items will include the following: I usually buy food products that are on sale, I buy the lowest priced brands that will suit my needs, when it comes to choosing most food products, I rely heavily on price, I usually pack my own lunch, I often buy pre-packaged food products to save time, I am not too concerned about the price of my lunch- I usually select the product which looks the tastiest.



## 9.0 RESULTS

### 9.1 *Data Cleaning*

Of a total of 704 collected surveys, 585 were usable. Due to outliers, reverse coding or incomplete survey submissions, 119 surveys were removed from the data.

Incomplete surveys were eliminated from the data set manually. A total of 99 surveys were started but not completed, which could be attributed to the participant's time constraints, internet failure, boredom or other unidentified reasoning's.

In order to ensure the participants answered questions appropriately, some variables were reverse coded. Namely, if the participant circled the same numeric value for each question it was evident they were not accurately reading and answering the questions. A total of 22 responses were removed from the data set as a result of this.

Once participants were removed from the data set, the variables which were reverse coded were recoded into the right numeric value. For example; a 7 would be recoded into a 1 and a 6 would be recoded into a 2. This was necessary as these variables were part of a multi-item scale and therefore each question needed to reflect the correct numeric value.

Reliability testing was conducted to determine if the multi item variables were internally correlated. Wells and Wollack (2003) state that reliability analysis is often viewed as a first-step in the test validation process. Cronbach's alpha is one of the most commonly used reliability tests. It is often considered a measure of item homogeneity; i.e., large alpha values indicate that the items are tapping a common domain (Wells and Wollack, 2003).

It is desirable to have a reliability coefficient of .70 or higher. Acceptable values of alpha scores range from 0.70 to 0.95, higher scores represent higher reliability (Tavakol and Dennick, 2011).

Table IV. presents the Cronbach alpha scores for this study

Table IV. Cronbach alpha scores

Name	label	Initial Cronbach Alpha	Alpha once deleted
Purchase Intention	PurchInt	.376	.798
Attitude towards the Product	ATP	.817	
Attitude Towards the Label	ATL	.790	
Attitude Towards the Act	ATA	.856	
Emotions Towards the Product	ETP	.933	
Level of Health Consciousness	HlthC	.839	
Level of Health Knowledge	HlthK	.793	
Level of Health Motivation	HlthM		
Preventive Health Behaviours	PHB	.881	
Preventive Health Behaviour Reason	PHBR	.815	
Preventive Health Behaviour Action	PHBA	.622	.759
Weight Locus of Control	WLOC	.689	Separate
Nutritional Information Interest	NII	.846	
Nutritional Information Usage	NIU	.957	
Nutritional Information Knowledge	NIK	.897	
Self-Efficacy	SEff	.711	
Self Esteem	SE	.872	
Pleasure	Pleasure	.939	
Daily Positive Behaviour Likelihood	DPBL	.939	
Healthy Positive Behaviour Frequency	HPBF	.755	
Emotional Eating Behaviour	EEB	.817	
Exercise Behaviour	EB	.810	
Price	Price	.617	.798

The Cronbach's alpha value for Weight Locus of Control was 0.689. This is slightly lower than the ideal score which ranges between 0.70 and 0.95. Tavakol and Dennick (2011) maintain that this is due to a number of reasons, which include the lack of questions and poor interrelatedness between items or heterogeneous constructs. According to Wallston (2005), modest reliability

which is ranging from 0.60 to 0.75 is acceptable in the research, and therefore 0.689 is an acceptable and practical reliability score for Weight Locus of Control in this study.

### Outliers

Outliers are described as figures which are numerically distant from the rest of the data and can, in some cases, have an effect on the overall findings (Barnett, Lewis and Abeles, 1979). In order to determine if there were any responses that would affect the overall results, a series of box and whisker graphs were produced to illustrate the main outliers of each dependent variable and covariate. A total of 33 participants were labelled as outliers for whom a separate variable was created. These outliers were removed temporarily from the data set to determine if they did in fact have an overall negative effect on the results.

It was then concluded that while this data set did contain a substantial amount of outliers, their numeric value was not significant enough to have an influence on the results. Therefore the outliers will remain in the data set.

### Assumption Testing

General assumptions about the population, such as normal distribution, skewness and kurtosis were examined within the dependent variables to determine if the sample was representative and well-modelled of the population. The nine key dependent variables included; Attitude Towards the Act (ATA), Attitude Towards the Label (ATL), Attitude Towards the Product (ATP), Emotions Towards the Product (ETP) Purchase Intention (PurcInt), Healthy Behaviour Likelihood (HealthBehav), Amount you would Expect to Pay (ExpectPay) and Amount you would Actually Pay (ActualPay). These were expected to change as a result of the nutritional label the participant was shown.

If the significance value of the dependent variable is lower than 0.05 when testing for normality then the data is considered to be not well-modelled of the population. Attitude Towards the

Act, Attitude Towards the Label, Attitude Towards the Product, Emotions Towards the Product, Purchase Intention, Healthy Behaviour Likelihood had a significance level of below 0.05 therefore, the data set did not reflect a normal distribution. Because of this, a stricter level of significance needs to be carried out to ensure this study is representative of the population. Due to the small sample size, a larger study would likely be more representative of the population.

Next, the level of skewness was measured which refers to asymmetry of the distribution. "A distribution with an asymmetric tail extending out to the right is referred to as positively skewed, while a distribution with an asymmetric tail extending out to the left is referred to as negatively skewed" (Wuensch, 2011, p.1) To determine how skewed the distribution is the standard error of skewness was calculated. According to Price (2000) a way to determine the degree of skewness is to "compare the numerical value for "Skewness" with twice the "Standard Error of Skewness". Then, include the range from minus twice the Std. Error of Skewness to plus twice the Std. Error of Skewness. If the value for Skewness falls within this range, then the level of skewness is considered not seriously violated" (p.1). The dependent variables within this range were, Attitude Towards the Act, Attitude Towards the Label, Attitude Towards the Product, Emotions Towards the Product, Purchase Intention and Healthy Behaviour Likelihood. The dependent variables which were not within this range were Price Expected to Pay and Price to Actually Pay. Because these variables did not fall between the normal distribution for skewness, they are considered violated and therefore a stricter level of significance must be used on these variables when running the statistical tests.

Kurtosis refers to the relative concentration of scores in the centre, upper, and lower ends and the shoulders of a distribution. A normal distribution will have a Kurtosis value of zero. So a range of "normality" is calculated by multiplying the Std. Error of Kurtosis by 2 and going from minus that value to plus that value (Price, 2000). Wuensch, (2011) states that a normal

Kurtosis is also known as mesokurtic distribution and non-normal kurtosis is known as leptokurtic distribution (p.2). The dependent variables Attitude Towards the Act, Attitude Towards the Label, Attitude Towards the Product, Emotions Towards the Product, Purchase Intention, Healthy Behaviour Likelihoods had a mesokurtic distribution as they were within the specified range. Price Expected to Pay and Price to Actually Pay were not within the recommended range and therefore had a leptokurtic distribution. These two dependent variables will use a stricter level of significance when testing for statistically significant results.

Table V. Illustrates the label recall rate of each labelling system, in which figures clearly show some were much more conspicuous than others.

Table V. Label Recall Rate

Label Type	N Total	N Recall	Recall Rate %
1 star	56	46	82%
3rd party	45	15	33%
3 star	39	35	90%
282 Calories	39	32	82%
564 calories	46	34	74%
Blank	39	39	
Di high	42	10	23%
Di low	44	9	20%
Running man hi	45	40	89%
Running man low	39	37	95%
Traffic light high	47	33	70%
Traffic light low	37	29	73%
Walking man high	42	39	93%
Walking man low	40	34	85%

Of the 585 usable surveys, 172 participants were removed from the data set as they did not remember seeing a label or could not recall the correct label. Therefore only 413 participants could be included in the statistical tests. The Central Limit Theorem describes the characteristics of the "population of the means" and suggests a minimum of 30 participants for each manipulation in order for it to be valid (Adams, 2000). Due to the extremely low recall rate of the 3<sup>rd</sup> Party Label and Daily Intake Guide these labels will not be examined in the Mancova.

This finding on its own creates major policy implications. The impact of this is discussed in detail on page 100 of the discussion. The Daily Intake Guide and the Third Party Label which are both currently displayed on products globally. One reason why the recall rate was so low may be due to the familiarity effect. Because participants are exposed to this label and are accustomed to seeing it, they are no longer paying attention to it. Ye and van Jaaij (1997) explain that if stimulus familiarity exceeds a certain level, affect will decrease. This means that a high level of familiarity will lead to overexposure - creating boredom and consequently producing negative feelings towards the label. Correspondingly, this shows that low familiarity also leads to liking and produces positive feelings towards the label. This theory would explain the extremely low recall rate of the Third Party and Daily Intake Guide and the relatively high recall rate of the Running, Walking and Star labelling system which are currently only in the proposal stage, and therefore have had no exposure to consumers.

## 9.2 *Sample Characteristics*

*Demographics:* Of the 413 usable surveys, 198 were male (47.9%) and 215 were female (52.1%). 131 participants resided New Zealand (27.4%), 271 of participants resided in the United States of America (65.6%) and 32 participants resided in India (7%). Of the sample, 196 participants were American (47.5%), 87 participants were New Zealand European

(21.1%), 59 were European (14.3%), 30 were Asian (7.3%) and 25 were Indian (6%).

Leaving the remaining 13 participants to either be of another ethnicity (2.4%) or who would prefer not to answer (0.7%). 45 (10.9%) of participants were aged 16-18, 83 participants (20.1%) were aged 19-23, 101 people (24%) were aged 24-29, 92 participants (22.2%) were aged 30-39, 53 people (12.8%) were aged 40-49, 24 participants (5.8%) were aged between 50-59 and 15 participants (3.6%) were over the age of 60.

*Income:* The samples consisted of 153 (36.8%) participants who earn less than \$15,000 a year, 96 participants (23.2%) who earned between \$15,000 and \$30,000. 61 participants (14.8%) who earned \$30,000-\$45,000, 50 participants (12.1%) who earned \$45,000- \$65,000 and 41 participants (9.9%) reported to earn over \$65,000. Over 70% of participants reported to earn less than the average American wage (as 65% of participants were from this country the currency was based on the USD). According to the *Official Social Security Website* (2012), the average wage per person in America is \$42,979. This low income sample is likely due to the fact that most participants were getting paid a small amount to complete the survey. It is possible that many of these people needed this money and therefore a low overall level of income was anticipated.

*Occupation:* These participants were also likely to have a less demanding lifestyle as they were able to spend the 15-20 minutes required to take the survey. Because of this, it was anticipated that many of the participants would either be unemployed, students or part-time workers. The sample comprised 132 students (32%), 50 unemployed (12.1%), 71 business professionals (17.2%), 27 trade workers (6.5%) and 26 Education professionals (6.3%). The remaining 107 participants (25.9%) were a combination of hospitality, design, health, legal, art and other professionals.

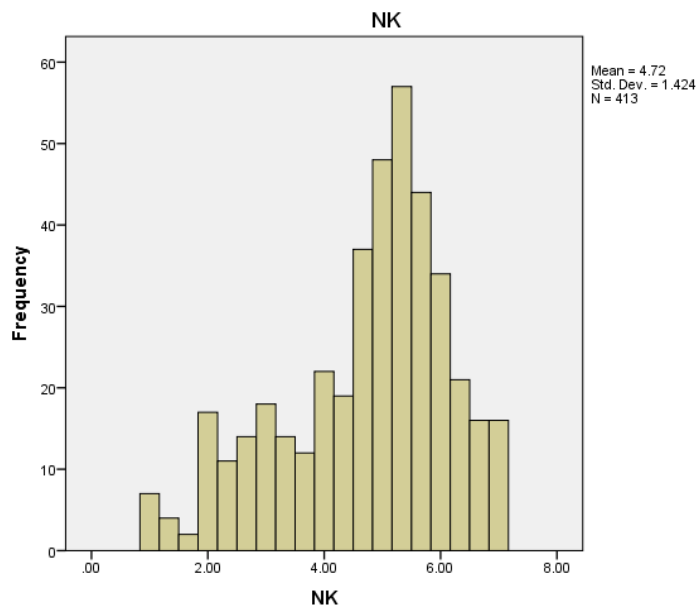
*Exercise behaviour:* Of the 413 participants, 21 people (5.1%) said they never exercised, 27 (6.6%) of participants reported exercising once a month or less, 36 (8.7%) said they exercised 2-3 a month, 60 people (14.5%) said they exercised once a week, 132 people in the sample (32%) said they exercised 2-3 times a week, 66 participants (16%) exercised 4-5 times a week, 21 people in the sample (5.1%) exercised more than 5 times a week and 50 participants (12%) exercised daily. Of the sample, 282 (68.3%) of participants agreed if their friends exercised they would be encouraged to exercise too, 93 people in the sample (22.5%) disagreed with this and 38 participants (9.2%) neither agreed nor disagreed.

*Nutritional Interest:* The sample was comprised of 336 (81.4%) participants who read nutritional labels and 77 participants (18.6%) who do not. 177 participants (42.9%) expected to pay \$3.00-\$4.00 for the sandwich, whereas 95 participants (23.7%) expected to pay less than \$3.00. However, 168 people in the sample (40.7%) were willing to pay \$3.00-\$4.00 and 168 participants (42.9%) were willing to pay less than \$3.00. Therefore, it seems people expected to pay much more than what they were willing to pay. This result will be examined in detail later.

*Nutritional Information Knowledge:* In order to determine to what degree participants believed they were knowledgeable about nutrition, they were asked to respond to the following statements: Compared to most people, I am quite knowledgeable about nutrition, In general how much do you think you know about nutrition? I do not know very much about nutrition in general. Many participants believed they were rather knowledgeable about nutrition ( $\mu = 4.72$ ,  $\sigma = 1.42$ ). Figure \* illustrates this.



Figure I. Nutritional Information Knowledge



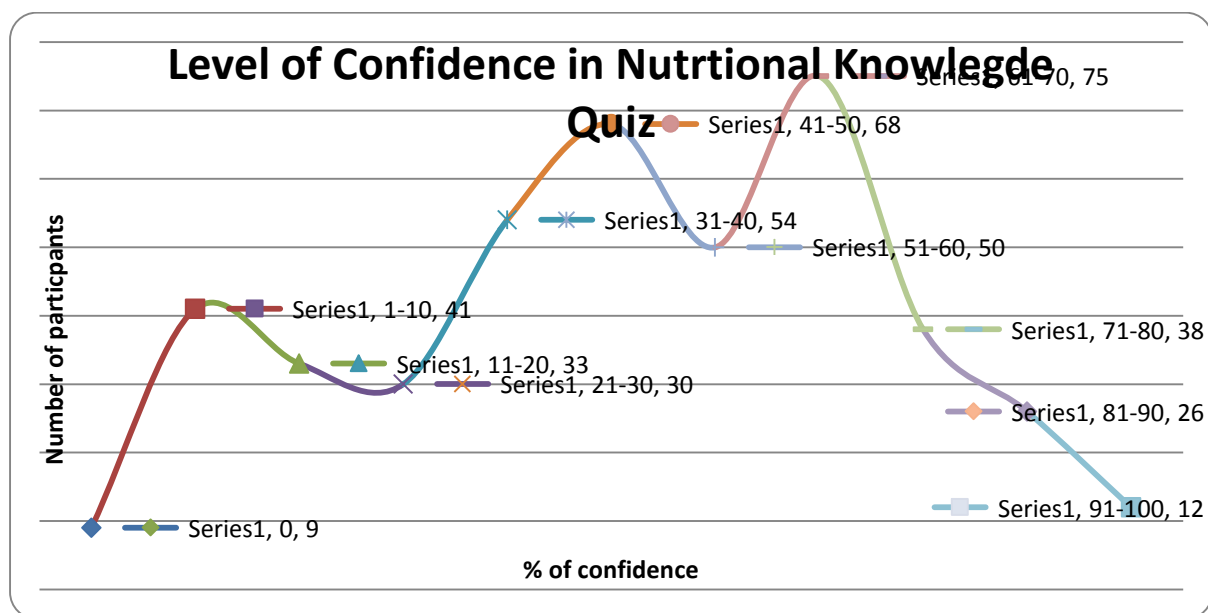
However, when asked multiple choice questions relating to nutritional knowledge, all but two of the 413 participants got the seven questions correct. Table VI. displays the pass rates for the quiz.

Table VI. Nutritional Knowledge State

Questions to Test Nutritional Knowledge	Correct	Incorrect
On average, how many calories should a person consume a day?	77.5%	22.5%
If you ran at an average speed of 10km per hour for an hour, on average how many calories would you burn	38.5%	61.5%
Nutritional guidelines suggest that no more than_____ per cent of calories per day should come from fat	26.2%	73.8%
How many calories are in 720kj?	39.7%	60.3%
How long would you expect to have to walk at an average pace of 6km per hour to burn of a 355ml can of coke?	19.4%	80.6%
If you eat 2000 calories per day, your daily saturated fat intake should be less than how many grams?	51.6%	48.4%
Risk of higher blood pressure is most likely to be reduced by eating a diet with _____?	74.1%	25.9%
total	46.7%	53.3%

Following the nutritional quiz, participants were asked to rate their overall level of confidence out of 100 ( $\mu = 46.81$ ,  $\sigma = 24.56$ ). Considering the extremely low pass rate this confidence level is still relatively high. Figure II. illustrates this.

Figure II. Level of Nutritional Confidence



This finding illustrates that many consumers believe to be knowledgeable about general nutritional information. However, research suggests the participants from this sample lacked general nutritional knowledge, and were therefore not as informed about nutrition as they perceived themselves to be.

Of the sample, 132 participants (32%) said they read nutritional food labels because they were weight conscious, 190 people (46.1%) reported they read nutritional labels because they were health conscious, 49 participants (12.2%) did so due to personal dietary requirements and 21 participants (5%) read labels due to other reasons.

Only 132 of participants (40%) eat breakfast daily and 82 (20%) often eat breakfast. 210 participants (51%) always eat lunch and 107 people in the sample (25.6%) often eat lunch. 310 participants (75%) always eat dinner and 81 participants (19.6%) often eat dinner. From these statistics, it can be concluded that dinner is the most commonly consumed meal and breakfast is the least commonly consumed meal.

### 9.3 Hypothesis Testing

*H1: The Running label will have a significant negative effect on Attitude Towards the Label and Attitude Towards the Act of high energy dense foods, compared the Walking label only if the participant also reported to have a low level of Preventive Health Behaviour.*

Label and Level of Preventive Health Behaviour were the two independent variables used to test for this hypothesis. Only participants who saw either a Running label or a Walking label were included in these statistical tests, along with two dependent variables; Attitude Towards the Label and Attitude Towards the Act. Lastly, the covariates likely to have an effect on participants' responses were included to minimize the systematic error and create higher levels of internal validity. These were: Weight Locus of Control, Nutritional Information Interest, Nutritional Information Usage, Nutritional Information Knowledge, Self-Efficacy, Self Esteem, Self Esteem State, Pleasure, Daily Preventive Behaviour Likelihood, Preventive Behaviour Frequency, Emotional Eating Behaviour, Exercise Behaviour, Preventive Health Behaviour Reason, Health Consciousness and Health Knowledge.

*Attitude Towards the Label:*

There was a significant interaction effect between the Label and Preventive Health Behaviour on Attitude Towards the Act at the 0.05 level ( $df=1$ ,  $F= 7.5$  and  $p=0.007$ ). This significant difference in means is illustrated in Figure III.

Figure III.

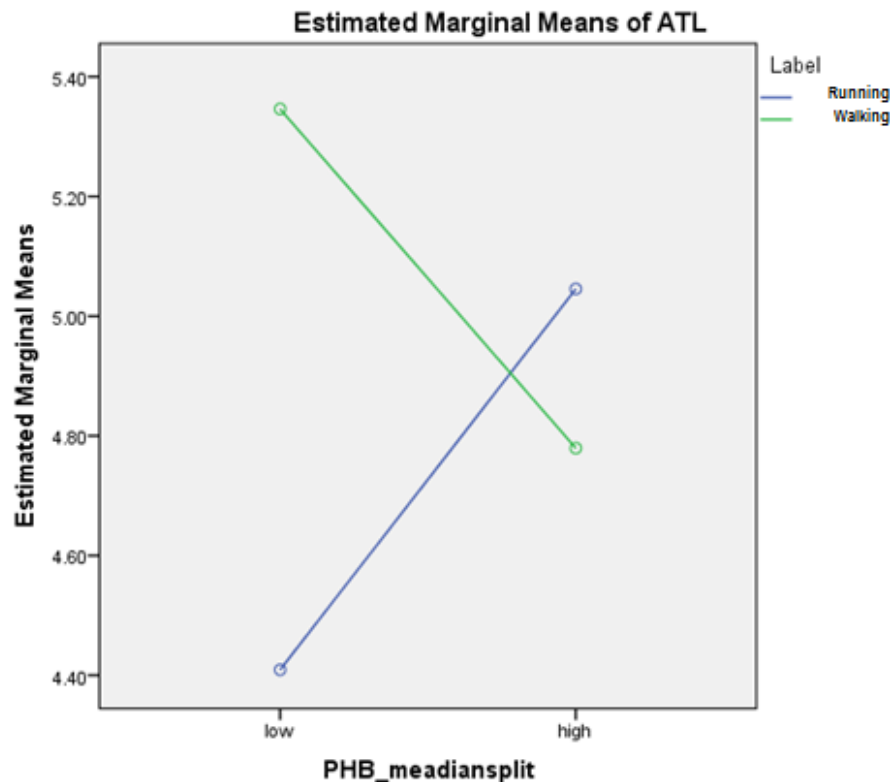


Figure III. shows that a participant who currently partakes in low levels of Preventive Health Behaviour had a significantly higher Attitude Towards the Walking label ( $\mu = 5.35$ ,  $\sigma=0.96$ ) than the Running label ( $\mu = 4.4$ ,  $\sigma=1.30$ ). However, participants who reported having high levels of Preventive Health Behaviours currently, had a significantly higher Attitude Towards the Running label ( $\mu = 5.05$ ,  $\sigma=1.41$ ) than the Walking label ( $\mu = 4.78$ ,  $\sigma=1.49$ ).

The difference in means between the two labels was significantly higher with participants who reported low levels of Preventive Health Behaviour than those who reported high levels. A

reason for this is likely to be because participants who have low Preventive Health Behaviours exercise less and therefore would not relate to and understand the Running label as well as those participants with high Preventive Health Behaviours. This explanation is discussed in more detail in the Discussion section on page 98. The significant difference in means of the Walking label between the participants' high and low Preventive Health Behaviours was unanticipated. Participants with a low level of Preventive Health Behaviour were not expected to have a higher Attitude Towards the Walking label than participants with a high level of Preventive Health Behaviour. This is a particularly interesting finding which can be used to help understand consumers with an unhealthy lifestyle. A reason for this significant difference in means could be due to the higher frequency of other more intense types of exercises that participants with high levels of Preventive Health Behaviours are likely to partake in (discussed further on page 98). They would find information on a stated period of time needed to walk off the product less useful or beneficial to them than low level Preventive Health Behaviour participants, who are likely to use walking as their main form of exercise. Low-level Preventive Health participants are expected to have less general exercise knowledge, and may therefore find information relating to walking time more useful and appealing than more vigorous types of exercise such as running. This result paves the way for future research to be undertaken, and aids in the understanding of consumer behaviour associated with food labels. It is evident from the significant differences in means that nutritional labels which consumers can relate to have a major influence on preference, and result in a greater overall Attitude Towards that Label.

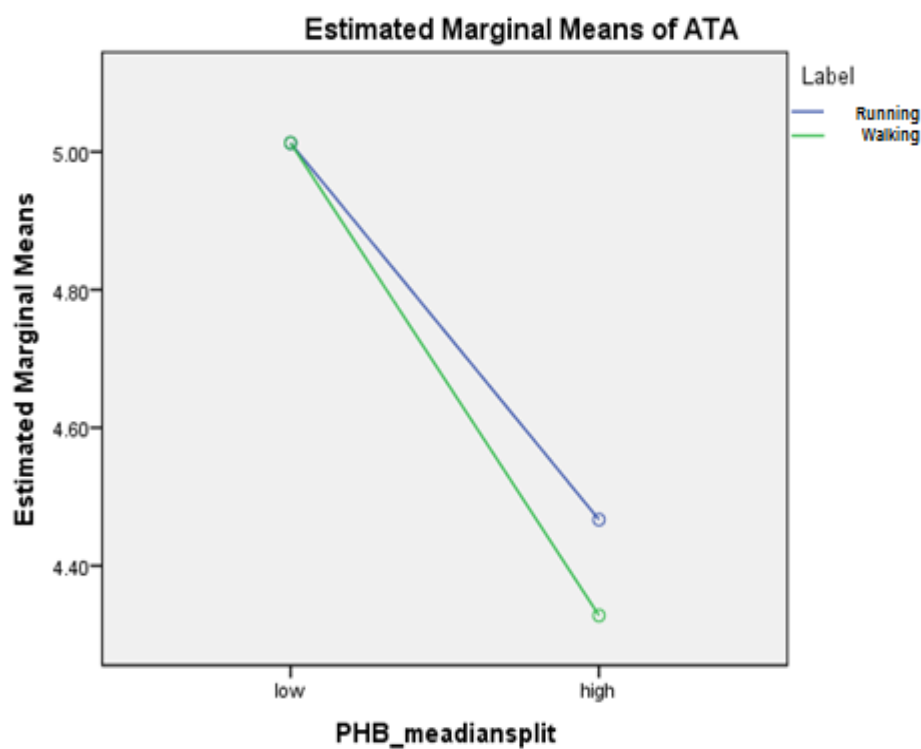
Due to this significant difference in means between the level of Preventive Health Behaviour and label type on Attitude Towards the Label, the first part of Hypothesis 1 can be accepted. In turn, the Running label has a significant negative effect on expected Attitude Towards the

Label of high energy dense foods compared to the Walking label, only if the participant reports to have a low level of Preventive Health Behaviour.

*Attitude Towards the Act:*

There was no significant interaction effect between the label and Preventive Health Behaviours on Attitude Towards the Act at the 0.05 level ( $df=1$ ,  $F= 0.111$  and  $p=0.774$ ). This is illustrated in Figure IV.

Figure IV.



Nevertheless, there was a significant main effect between the participant's level of Preventive Health Behaviour and their Attitude Towards the Act ( $df=1$ ,  $F= 4.78$  and  $p= 0.031$ ). This significant main effect shows that a participant's level of Preventive Health Behaviour has an overall effect on the participant's Attitude Towards the Act - regardless of whether they are shown a Running label or a Walking label. This graph illustrates that a participant who has a

low level of Preventive Health Behaviour has a higher Attitude Towards the Act ( $\mu = 5.02$ ,  $\sigma = 1.00$  or  $\sigma = 1.17$ ) of consuming the sandwich than a participant who has a high level of Preventive Health Behaviour ( $\mu = 4.49$ ,  $\sigma = 0.92$  and  $\mu = 4.37$ ,  $\sigma = 0.88$ ). However, it was expected that these differences in means would be the opposite. Participants who do not partake in Preventive Health Behaviours were expected to have a lower Attitude Towards the Act than those participants with high levels of Preventive Health Behaviour. These participants have been found to be less knowledgeable about the amount of exercise they would need to do in order to burn off a product and should be more surprised, resulting in a negative perception towards consuming the products. This finding will help to effectively understand illiterate, unhealthy consumers better.

One reason why the differences in means contradicted what was expected may be because the participants with low levels of Preventive Health Behaviours are likely to have less knowledge and understanding of calorie conversion to exercise expenditure when calculating the time needed to exercise. Therefore, they are likely to accept the information on the label without realising the full consequence of the “46minute Brisk Walk” or the “23minute Run” required to burn off the product. However, the opposite would be true for health-literate consumers. They are likely to have an accurate idea of calorie conversion to energy expenditure. As communicated in detail on page 99. Due to the over-exaggerated figures on both the Running and Walking labels in the high caloric condition, some of the information is likely to appear largely unbelievable and shocking, therefore, they are likely to have a lower Attitude Towards the Act of consuming the Unhealthy sandwich.

Further reasoning behind why low level Preventive Health Behaviour participants are likely to have a higher Attitude Towards the Act could be due to their low levels of nutritional interest. The information on the label is likely to be less noticeable for these participants and therefore

may result in a higher Attitude Towards the Act. In contrast, for a participant with high Preventive Health Behaviours the unexpected exercise expenditure required to burn off the product is likely to stand out more in a negative way and therefore the result is a lower Attitude Towards the Act. It is expected that with a Healthy product the Running label will have a higher Attitude Towards the Act, due to the deliberately understated exercise expenditure time. This reasoning is discussed further in the discussion section (p.98)

Because there are no differences in the means of either the Running Label or the Walking Label on Attitude Towards the Act, the second element to Hypothesis 1 cannot be supported. As a result, Hypothesis 1 is only partially supported; The Running label has a significant negative effect on expected Attitude Towards the Label of high energy dense foods, compared to the Walking label if the participant has low levels of Preventive Health Behaviours. However, the Running label did not have a significant negative effect on Attitude Towards the Act on high energy foods if the participant also reported low levels of Preventive Health Behaviours, and therefore cannot be accepted.

*H2: The Unhealthy Running label will have a significantly greater effect on a participant's Healthy Behaviour Likelihood and a significant negative effect on Purchase Intention than No label only if the participant also reports to have high levels of Preventive Health Behaviour.*

The Independent variables used to test for this hypothesis included Label and Level of Preventive Health Behaviour. Only participants who saw the Unhealthy Running label and No label were included in this statistical test. The dependent variables Healthy Behaviour Likelihood and Purchase Intention were then added to the Mancova. Lastly, the covariates, Weight Locus of Control, Nutritional Information Interest, Nutritional Information Usage,



Nutritional Information Knowledge, Self-Efficacy, Self Esteem, Self Esteem State, Pleasure, Daily Preventive Behaviour Likelihood, Preventive Behaviour Frequency, Emotional Eating Behaviour, Exercise Behaviour, Preventive Health Behaviour Reason, Health Consciousness, Health Knowledge, Gender, Age, Income, Ethnicity, Occupation and Country of Residence were included which were expected to influence the participants overall Healthy Behaviour Likelihood and Purchase Intention.

#### *Healthy Behaviour Likelihood:*

There was not significant interaction effect at the 0.05 level ( $df=1$ ,  $F=0.203$  and  $p=0.633$ ). However, there was a significant main effect between the label and Healthy Behaviour Likelihood ( $df=1$ ,  $F=5.56$  and  $p=0.022$ ) as illustrated in Figure V. below.

Figure V.

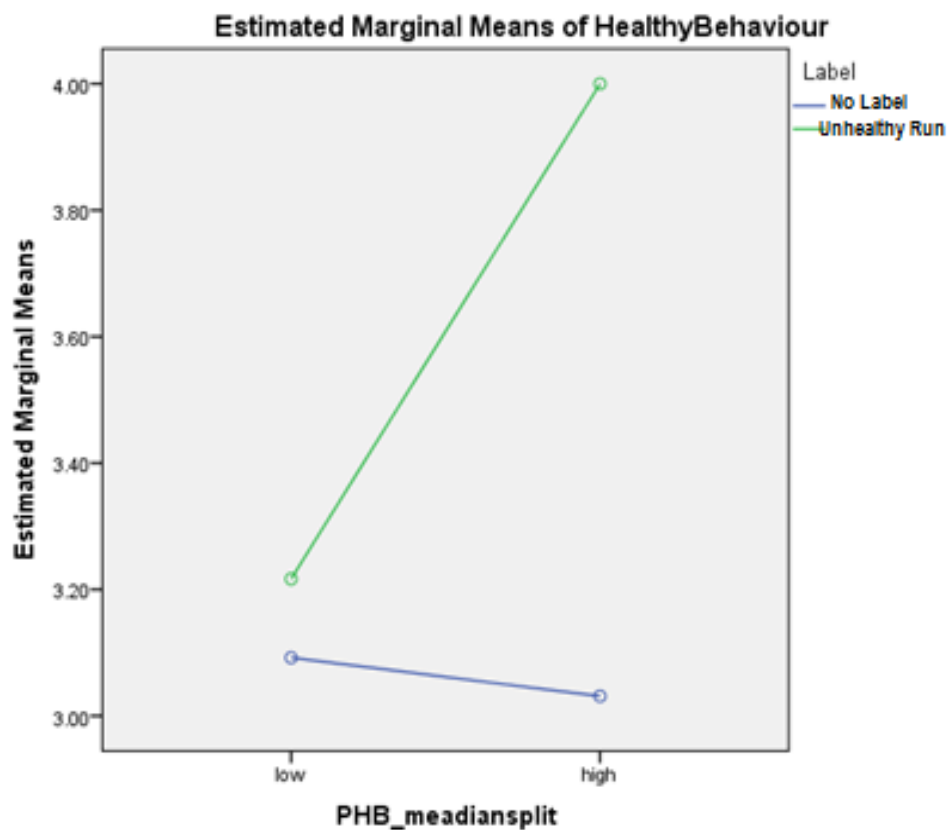


Figure V. illustrates that although there is no interaction effect between the level of Preventive Health Behaviour and the Label, there is a significant difference in means between No label and the Running label. This difference in means between the labels is more significant with the Unhealthy Running label, than with the Healthy Running label, which is exemplified by the larger gradient.

It shows that the Running label has a higher expected Healthy Behaviour Likelihood ( $\mu=3.75$ ,  $\sigma=0.88$ ) than No label ( $\mu=3.03$ ,  $\sigma=1.21$ ), solely in participants who currently partake in Preventive Health Behaviours. There is a small difference in means if the participant has a low level of Preventive Health Behaviour. They are less likely to exercise when shown the Running label ( $\mu=2.94$ ,  $\sigma=1.01$ ) compared to when they are shown No label ( $\mu=3.09$ ,  $\sigma=1.22$ ) however, this difference in means between levels of Preventive Health Behaviour is insignificant at the 0.05 level.

This significant difference in means between the two labels confirms that a front-of-pack label is more effective in deterring consumers from Unhealthy products than No label. It also confirms that consumers who have a higher level of Preventive Health Behaviour are more likely to partake in Healthy Behaviours after consuming the product. However, interestingly, low level Preventive Health consumers are also more likely to partake in Healthy Behaviours when shown the Running label compared to No label. While this discrepancy in Healthy Behaviour Likelihood is far less significant with low level Preventive Health Behaviour participants, there is still a small difference in means. This illustrates that a label can in fact have an effect on consumers who do not partake in healthy behaviours. This is conversed further in the discussion on page 101. It is a valuable finding, which helps to understand ways of effectively communicating to consumers with both high and low health awareness. The significant interaction effect between the labels and level of Preventive Health Behaviour in Hypothesis 1 confirms that label preference varies greatly depending on a consumer's current

level of Preventive Health Behaviour. Thus, the notion of finding a label relatable to both high and low health-aware consumers is crucial.

Although there was a difference in means between the Label and level of Preventive Health Behaviour on Healthy Behaviour Likelihood ( $\mu = 4.00 - \mu = 3.22$ ) it was not significant at the 0.05 level, however, with a larger sample size it is expected to be. This finding will be useful for future research into understanding consumption behaviour associated with nutritional labelling.

### *Purchase Intention*

There was a significant interaction effect at the 0.05 level ( $df=1$ ,  $F=4.78$  and  $p=0.031$ ).

Figure VI. illustrates this.

Figure VI.

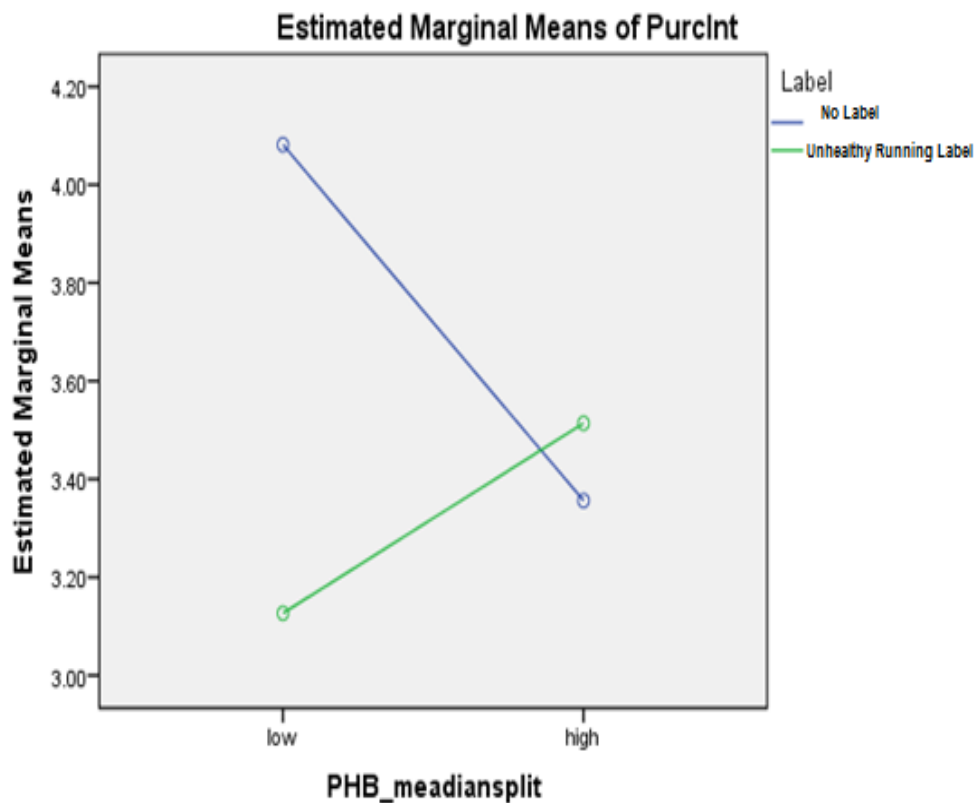


Figure VI. demonstrates that a participant who has a high level of Preventive Health Behaviour did not report a significant difference in Purchase Intention between No label ( $\mu=3.33$ ,  $\sigma=1.23$ ) and the Unhealthy Running label ( $\mu=3.49$ ,  $\sigma=1.19$ ). This could be due to any pre-existing knowledge Preventive Health Behaviour participants have garnered over time. Therefore, they can anticipate the average energy content of the sandwich without needing the nutritional information present. Interestingly, these participants had a slightly higher Purchase Intention for the Unhealthy Running label. This could be explained by the availability of nutritional information in general, as these participants are likely to find this information useful and worthwhile due to also reporting reading and enjoying the presence of nutritional information. This theory is explained further in the Discussion on page 98.

The more interesting and statistically significant finding exists between the low level of Preventive Health Behaviour participants. There is a considerable difference in the means between No label and the Unhealthy Running label. Figure V1. illustrates that a participant with a low current Preventive Healthy Behaviour is more likely to purchase a sandwich which does not have any nutritional labelling ( $\mu=4.09$ ,  $\sigma=1.27$ ), than a sandwich which states they would have to run for 46minutes to burn off the product ( $\mu=3.12$ ,  $\sigma=1.06$ ).

A reason for this significant difference in means is likely due to the preference in information. Participants who have a low current Preventive Healthy Behaviour are likely to not care as much about the availability of nutritional information (discussed further on page 99). As found in Hypothesis 1, participants with low levels of Preventive Healthy Behaviour had a low preference towards the Running label, and therefore it is likely that they would prefer a label that does not display any nutritional information. Conversely, a person who currently partakes in Preventive Healthy Behaviours had a high preference towards the Running label and therefore is likely to appreciate the availability of nutritional information.

As a result of these findings, Hypothesis 2 is partially supported; The Unhealthy Running label did not have a significantly greater effect on a participant's Healthy Behaviour Likelihood than No label when the participant reported high levels of current Preventive Healthy Behaviours. However, the Unhealthy Running label did have a significantly negative effect on the participant's Purchase Intention when the participant retained high levels of current Preventive Healthy Behaviours.

*H3: The Third party label will have a significantly greater effect than the Caloric label in Healthy behaviour likelihood only if the consumer has a high level of Preventive Health Behaviour.*

This hypothesis will not be answered due to the extremely low recall rate of the Third Party label. However, this finding alone has a major political implication for the success rate of Third Party labels which are widely used on food packaging around the globe. Findings from this study show that The Heart Foundation Tick, a well-known labelling system in New Zealand, may actually be less effective than food companies realise.

The answer to why this label was not well recalled by participants could be due to one or more of the following reasons. Firstly, 66% of participants were from America and therefore they may not recognise this Third Party label which was similar to the Heart Foundation Tick. Secondly, Third Party labels are generally accompanied by an additional standard front-of-pack labelling system. Final, this Third Party Endorsement does not provide nutritional information as seen on other labels. It simply provides a positive symbol, which could be overlooked when glancing at the picture and could be perceived as an aspect of the branding rather than a label - especially by consumers who are not familiar with the New Zealand Heart Foundation Tick. Theory of the low recall rate is included in the Discussion on page 101.

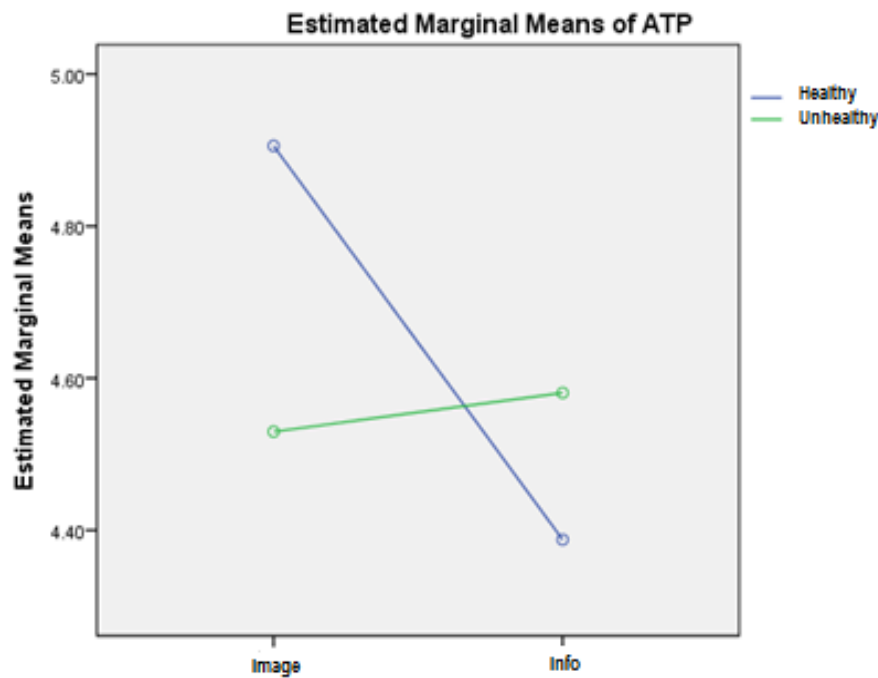
In saying this, the extremely low recall rate (33%) is still somewhat unwarranted as findings from this research showed that other unfamiliar labels had a higher overall recall rate than the familiar labels. Also, this label was altered so it did not replicate the actual Heart Foundation Tick, and therefore, for the 25% of New Zealand participants in this study the label should have actually been clearer.

*H4: Image based labels (Running and Walking) will have a significant negative effect on Attitude Towards the Product compared to Information based labels (Star and Calories) only if the product is Unhealthy.*

The manipulations were split into either image or information-based categories. In order to do so, the Star System and Calorie label was recoded into the same variable, as was the Running and Walking labels. The Traffic Light, Third Party and Daily Intake Guide were left out of this Mancova as they were either a mixture of information and image-based labels, or they relied too heavily on colour as the main form of communicating the nutritional content. Including these variables would have measured different aspects of the labels which may have affected the results for this hypothesis. The dependent variable Attitude Towards the Product was included in the Mancova along with the covariates Health Knowledge, Nutritional Information Interest, Nutritional Information Usage, Nutritional Information Usage State and Nutritional Information Knowledge.

There was a significant interaction effect between the Healthiness of the Product and the Label on the Attitude Towards the Product ( $df=1$ ,  $F=4.73$  and  $p=0.030$ ). Figure VII. illustrates this.

Figure VII.



This graph illustrates that the level of Healthiness and the type of information given to consumers had a statistically significant effect on the participant's Attitude Towards the Product at the 0.05 significance level.

Figure VII. illustrates that when participants were shown a product from the Unhealthy condition, the difference between the Image based label ( $\mu=4.53$ ,  $\sigma=1.71$ ) and the Information based label ( $\mu=4.58$ ,  $\sigma=1.07$ ) was not significant, as demonstrated by the horizontal line. On the contrary, when the participant was given a product from the Healthy condition there was a significant difference in means. Those presented with a Healthy product containing Image based labelling ( $\mu=4.92$ ,  $\sigma=.88$ ) had a much higher Attitude Towards the Product than those participants who were given a Healthy product with Information based labelling ( $\mu=4.4$ ,  $\sigma=1.06$ ).

This finding was unexpected, as it was predicted that Unhealthy labelling would have more of an effect on responses than Healthy labels. A Reason for this major difference in means could be due to the low exercise expenditure recommendations displayed on both the Running and Walking labels in the Healthy condition. It is likely the exercise figures are perceived as pleasing. Additionally, findings have shown that images are a more effective form of communication compared to all other forms of text based communication (Veer and Rank, 2012), which effectively explains the significant difference between the Healthy Image and Healthy Information conditions found in this study. Explained in-depth in the Discussion on page 101.

Subsequently, an unexplained finding in this Mancova is between the Healthy and Unhealthy Information based labels. It was expected that participants would find the high Caloric Information less appealing than the low Caloric Information, but surprisingly this was not the case. A possible reason for this could be because participants found both of the Information based labels dull and did not fully pay attention to the Caloric Information displayed. This difference in means was diminutive and therefore may not be significant in a larger sample size.

There was also a slight difference in means between the Unhealthy Image and the Healthy Image. When participants were shown an Image, they reported to have a lower Attitude Towards the Product than when they were shown Caloric Information. Therefore participants rated the Image of a person exercising on a high energy product less pleasant, positive and appealing than the Caloric Information on high energy foods.

This interaction effect shows that an Image of a person exercising is more effective than Caloric Information in aiding consumers to make healthier food choices. It is also more effective at deterring consumers from Unhealthy products. Due to this significant interaction effect ( $df=1$ ,



$F=5.04$  and  $p=0.026$ ) we can accept the hypothesis. Namely, labels which display Images (Running and Walking) will have higher Attitude Towards the Product than labels which display Caloric Information (Star or Calorie) only if the participant is shown a Healthy product.

*H5: The Star System will have a greater significant effect on a participants Predicted Health Behaviour than simple Caloric labelling only if the product is Unhealthy.*

Only participants who were shown the Star label and the Caloric Label were included in this Mancova. The dependent variable Predicted Healthy Behaviour was also included along with the following covariates: Exercise Behaviour, Emotional Eating Behaviour, Nutritional Information Interest, Nutritional Information Usage, Nutritional Information Knowledge, Daily Preventive Behaviour Likelihood, Healthy Preventive Behaviour Frequency, Preventive Health Behaviour Reason, Health Consciousness, Health knowledge. These covariates were expected to have the biggest influence on the participant's responses to their Predicted Healthy Behaviour.

The interaction effect between the Label and the Healthiness of the product on Healthy Behaviour Likelihood after consumption was not significant at the 0.05 level ( $df=1$ ,  $F=0.82$  and  $p=0.77$ ). However, there was a significant main effect between the healthiness of the product and the Healthy Behaviour Likelihood ( $df=1$ ,  $F=4.65$ ,  $p=0.033$ ).

This significant main interaction effect between these variables indicates that, although the type of label does not have a significant effect on the Healthy Behaviour Likelihood, the difference in caloric information does. Therefore, when the same product displays double the amount of calories a participant is more likely to feel guilty, avoid the product and exercise if they

consume it. This finding proves that most participants were aware of the nutritional figures shown to them and, to some extent, understood what the caloric figures.

It is expected that with a bigger sample size the differences in means may become significant and the Star System would have a predominantly greater effect on encouraging consumers Healthy Behaviour Likelihood.

*H6: Consumers who have a high Weight Locus of Control (believe they control their weight) will have a significantly greater Attitude Towards the Product and Purchase Intention than consumers who have a low Weight Locus of Control only if the product is Healthy.*

In answering this hypothesis, Weight Locus of Control – which originally ranged from 1-7- was split into two separate variables. This was achieved by determining the median, and creating a variable either side of this figure. The variables were renamed either high Weight Locus of Control or low Weight Locus of Control dependent on the participants response. This new variable was entitled Weight Locus of Control Median Split, and for the purpose of this hypothesis it was considered an independent variable alongside the level of Healthiness of the product. The dependent variables Attitude Towards the Product and Purchase Intention were included in the Mancova along with the covariates Self-Esteem, Pleasure, Self-Efficacy, Emotional Eating Behaviour, Exercise Behaviour and Health Consciousness. These covariates were expected to have the biggest influence on the participants overall Attitude Towards the Product and Purchase Intention. Including these covariates in the statistical analysis created a higher level of internal validity.

### *Attitude Towards the Product*

This interaction effect was not statistically significant at the 0.05 level ( $df=1$ ,  $F=3.78$  and  $p=0.052$ ). However, the extremely close  $p$  value indicates that with a slightly bigger sample size it would be. Figure VIII. Illustrates this.

Figure VIII.

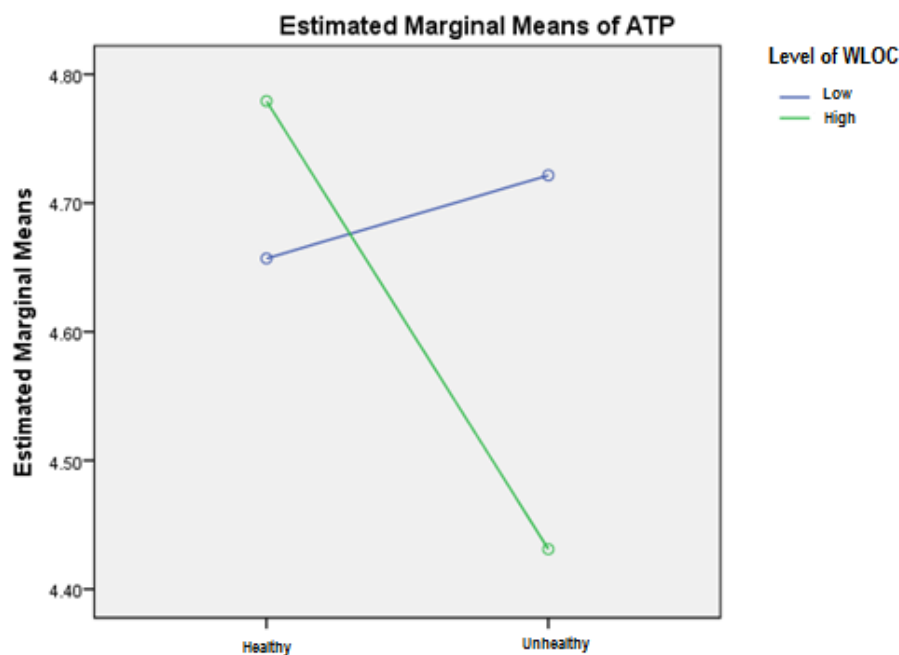


Figure VIII. shows that people who have an external Weight Locus of Control (believe they do not control their own weight) did not show any major difference in Attitude Towards the Product with either the Healthy condition ( $\mu=4.66$ ,  $\sigma=1.02$ ) or the Unhealthy condition ( $\mu=4.72$ ,  $\sigma=1.15$ ). Essentially, externals saw no real variance in the different labelling information. This could be because they do not care about the material on the nutritional labels and therefore, do not require any external information to aid their judgement. However, when looking at those who have an internal Weight Locus of Control (believe they control their own weight) the change is statistically significant. They enjoyed the Healthy products ( $\mu=4.78$ ,

$\sigma=1.00$ ), but not the Unhealthy products ( $\mu=4.43$ ,  $\sigma=1.07$ ). The difference in means was significantly lower for the Unhealthy products but only when dealing with internal Weight Locus of Control participants.

Reasons for the significant disparity between the Healthy and Unhealthy condition for participants with an Internal Weight Locus of Control is likely due to their current eating behaviours and nutritional knowledge. Because internals believe eating unhealthy foods increases their weight they are more likely to be cautious of the food they eat and would therefore find the Unhealthy condition less appealing and pleasant in comparison to the Healthy condition. This idea would account for the significant difference in Attitude Towards the Product between the two labelling conditions for participants who believe they control their own weight. It also justifies why there is little difference in the means between the Unhealthy and Healthy condition for participants who have an external Weight Locus of Control. Interestingly, their Attitude Towards the Product is slightly higher in the Unhealthy condition which demonstrates their lack of attention to nutritional labels. This clearly reflects the overall influence food packaging has on different consumers and sheds a glaring light on the effectiveness of nutritional information. As discussed further on page 101-102.

Figure IX. illustrates that there is an interaction effect between Weight Locus of Control and the Healthy condition on Purchase Intention. This interaction effect is statistically significant at the 0.05 level ( $df=1$ ,  $F=7.87$  and  $p=0.005$ ).

Figure IX.

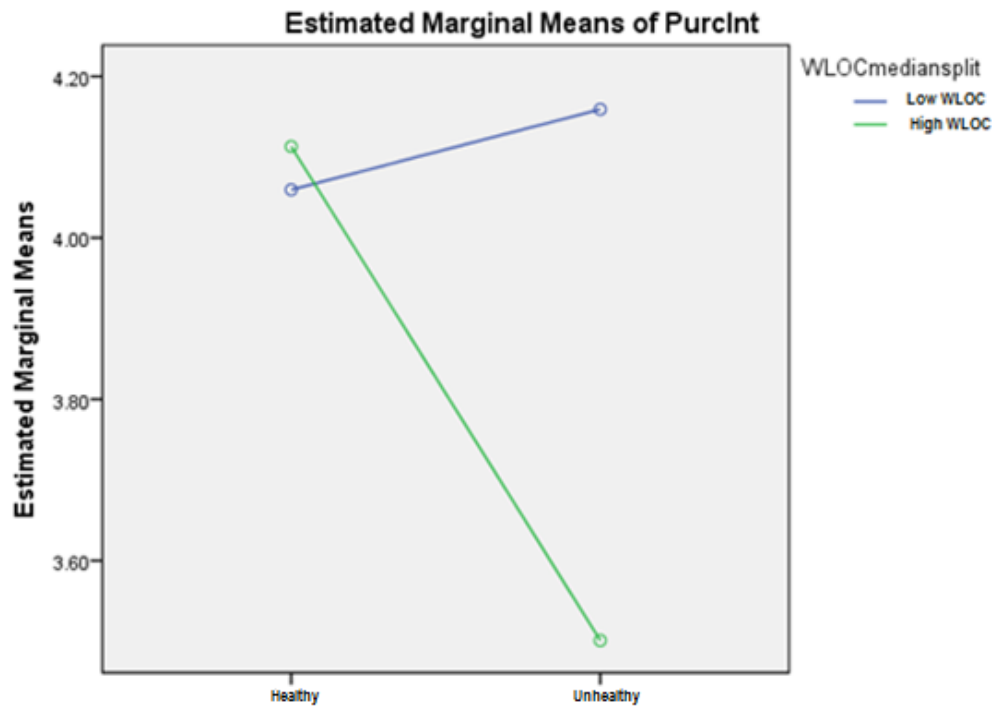


Figure IX. illustrates that a person who has a low (external) Weight Locus of Control did not report any significant difference in Purchase Intention between the Unhealthy product ( $\mu=4.16$ ,  $\sigma=1.19$ ) and Healthy product ( $\mu=4.07$ ,  $\sigma=1.32$ ). This finding reflects the above results and shows that participants with internal Weight Locus of Control are less likely to care about the nutritional information on the package. In turn, their Purchase Intention is not dramatically altered when the information on the package changes. Perhaps rather strangely, as aforementioned these participants have a higher preference towards the Unhealthy condition hence, their Purchase Intention is slightly higher - but this difference is not noteworthy. An explanation for this could purely be due to their preference in unhealthy foods, therefore they believe that the product with the higher energy content will be more enjoyable, leading to a higher Purchase Intention.

The most interesting and statistically significant finding is between the Unhealthy and the Healthy condition for participants with an internal Weight Locus of Control. Those who were

shown a product from the Unhealthy condition ( $\mu=3.46$ ,  $\sigma=1.42$ ) had a significantly lower Purchase Intention than those who were shown a product from the Healthy condition ( $\mu=4.12$ ,  $\sigma=1.18$ ), but only if the participant reported to have a high Weight Locus of Control. This finding also aligned with the findings from part one of Hypothesis 6 and can be explained by their desire to consume products which are healthy for them to ensure they do not gain weight. These participants are likely to detect and be more cautious of the nutritional information and avoid the high caloric products. This is adequately explained in detail in the Discussion on page 100.

Due to the significant differences in means Hypothesis 5 is partially supported and therefore: Consumers who have a high Weight Locus of Control have a significantly greater Purchase Intention than consumers who have a low Weight Locus of Control only if the product is Healthy.

Although there was a major difference in means between the Level of Healthiness and the Level of Weight Locus of Control on Attitude Towards the Product, this was not statistically significant at the 0.05 (0.052). However, it was extremely close to being so and it is believed with a larger sample size it would be.

*H6: The Traffic Light label will have a greater significant effect on the participants Attitude Towards the Act than the Star System, only if the participant also has a high level of Preventive Health Behaviour.*

Label and Level of Preventive Health Behaviour were the two independent variables used to test for this hypothesis. Only participants who saw either a Traffic Light label or a Star label were included in this test. The dependent variable Attitude Towards the Act was used in this

Mancova along with the covariates Nutritional Information Interest, Nutritional Information Usage, Nutritional Information Knowledge, Emotional Eating Behaviour, Exercise Behaviour, Health Consciousness, Health Knowledge, Age, Gender, Occupation, Income, Ethnicity and Country of Residence. These were the main covariates expected to have an influence on the participant's level of Weight Locus of Control and including them in the Mancova would create a higher level of internal validity.

This interaction effect between the label and Preventive Healthy Behaviour on Attitude Towards the Act is significant at the 0.05 level ( $df=1$ ,  $F=4.83$  and  $p=0.03$ ).

Figure X.

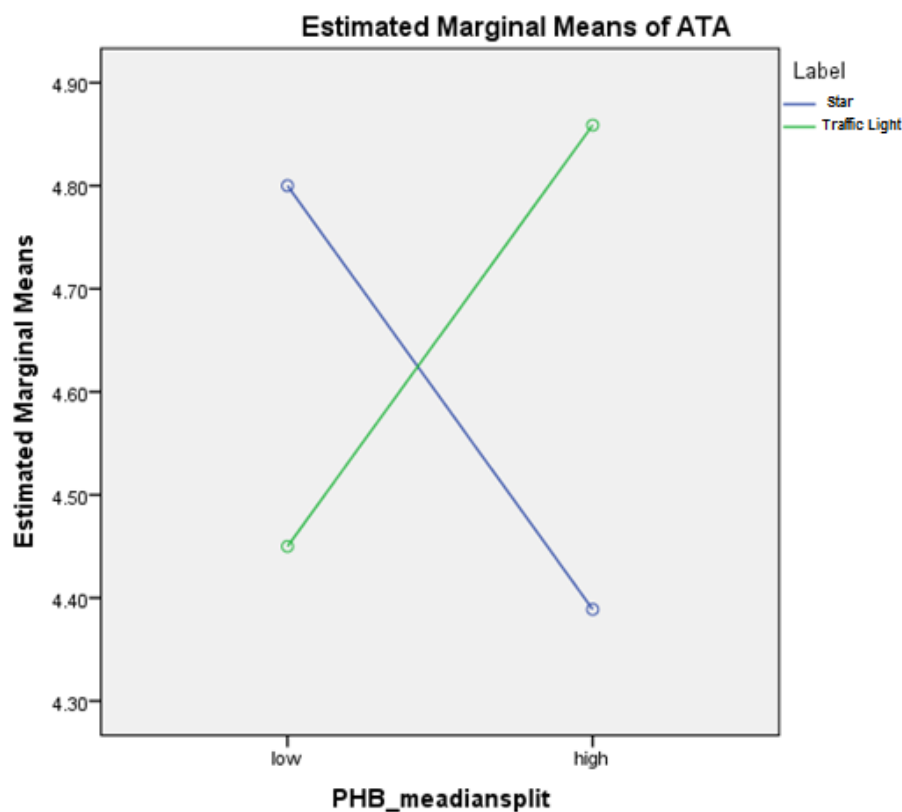


Figure X. Illustrates that those participants who partake in current Preventive Healthy Behaviours have a higher Attitude Towards the Act with Traffic Light labelling ( $\mu = 4.86$ ,  $\sigma = 1.08$ ) than with the Star System ( $\mu = 4.4$ ,  $\sigma = 1.15$ ). However it is the opposite for those participants with low Prevent Health Behaviours; they had a higher Attitude Towards the Act of the Star System ( $\mu = 4.8$ ,  $\sigma = 0.87$ ) than the Traffic Light label ( $\mu = 4.45$ ,  $\sigma = 1.26$ ).

A reason for this significant difference in means is expected to be due to the lack of information included in the Star System. A person who has high levels of Preventive Health Behaviour is cautious about food they put into their bodies and therefore is likely to pay more attention to nutritional labelling. The information they are provided with on the Traffic Light label is more comprehensive than the information on the Star System as it includes an array of figures, colours and nutritional components. This is likely to be interpreted and understood better by a participant who partakes in high levels of Preventive Healthy Behaviour and is familiar with the nutritional components of food products displayed on the Traffic Light label. This is communicated further on page 99. However, participants who have low current levels of Preventive Health Behaviour may find the Traffic Light label overwhelming and may view the traffic light label as less beneficial, useful and good for their health. It is also likely that the figures and colours were interpreted negatively by participants who lacked nutritional knowledge. This result alone shows that participants who do not partake in an active, healthy lifestyle are more likely to struggle to interpret and understand labels which contain information about different nutritional components.

Participants who reported to have low levels of Preventive Health Behaviour had a higher Attitude Towards the Act when shown the Star System, compared to the Traffic Light label. Therefore, the Star System is likely to be the most beneficial for consumers who partake in low



levels of Preventive Healthy Behaviours in encouraging them to purchase healthy products, however, it will be less beneficial when purchasing unhealthy products. Refer to page 98 for a more detailed explanation.

Due to the lack of nutritional knowledge of many New Zealand and American consumers, it is evident that more educational nutritional content needs to be readily available for consumers. This will prepare them with better understanding of more complex labels, which then aids them to make healthier food choices.

#### 9.4 Covariates

Covariates were included in this study to reduce the amount of experimental error and increase the internal validity. Of the twenty-three covariates included in this study only nine of them had a significant effect on at least two of the dependent variables when grouped together in the main Mancova model. These included Pleasure, Nutritional Information Interest, Age, Occupation, Country of Residence, Self-Esteem State, Income, Exercise Behaviour, Emotional Eating Behaviour and Self Efficacy. Pleasure and Nutritional Information Interest had the greatest effect on the dependent variables and were both significant at the 0.05 level. Therefore, only these two covariates will be discussed in detail.

*Pleasure:* The significant influence Pleasure had on the dependent variables were as follows; Attitude Towards the Product ( $df=1$ ,  $F=30$  and  $p=0.001$ ), Attitude Towards the Label ( $df=1$ ,  $F=8.08$  and  $p=0.03$ ), Attitude towards the Act ( $df=1$ ,  $F=20.8$  and  $p=0.001$ ), Emotion Towards the Product ( $df=1$ ,  $F=28.03$  and  $p=0.001$ ) and Purchase Intention ( $df=1$ ,  $F=43.8$  and  $p=0.001$ ). These statistically significant figures illustrate the influence Pleasure has on the participant's responses. The multi-item scale was based on how the participant was feeling at the time. Therefore, their overall Pleasure is likely to fluctuate depending on both external and internal

factors, and is likely to vary greatly from day to day. Accordingly, this covariate is not very accurate at establishing a reliable response. Because this covariate has a significant influence on the participant's responses it is expected to have an effect on the overall results obtained from this study. The limitations of this will be later discussed in detail.

The Significance levels for Nutritional Information Interest were: Attitude Towards the Product ( $df=1$ ,  $F= 5.1$  and  $p=0.023$ ), Attitude towards the Act ( $df=1$ ,  $F=5.98$  and  $p=0.015$ ), Emotion Towards the Product ( $df=1$ ,  $F=4.8$  and  $p=0.29$ ) and Purchase Intention ( $df=1$ ,  $F=14.97$  and  $p=0.00$ ). These statistically significant results demonstrate that as Nutritional Interest increases so too does the effect it had on the dependent variables. This result reflects a necessity to enforce the notion of nutrition as an interesting and desirable topic to the average consumer, which will in turn attract more people to nutritional labels and result in positive behavioural changes in them.

The non-significant values from the remainder of the covariates shows that regardless of the participants Ethnicity, Gender, Nutritional Information Knowledge, Nutritional Information Usage, Daily Positive Behaviour Likelihood, level of Health Consciousness, Level of Health Knowledge, Healthy Positive Behaviour Frequency, Healthy Positive Behaviour Frequency and Price had no statistically significant effect on the Mancova models.

### *9.5 Interesting Findings*

Due to the extensiveness of this study there was a vast collection of key findings. However, these will not all be discussed in detail. Instead, four important results which have a major influence on consumption and food choices will be discussed in depth. The interesting and unforeseen results discovered from the Hypothesis testing triggered the desire to dig deeper into understanding the relationship between labelling systems, the Health condition and

specific personal characteristics. These findings were unanticipated and add major insight into understanding consumption behaviour associated with nutritional labels.

Firstly, the relationship between the Health condition and the level of Preventive Health Behaviour was explored in detail to generate a more in-depth understanding of the independent effect the nutritional values had on responses.

This Mancova was conducted to determine the participant's overall Attitude Towards the Label, based on the Health condition rather than the Labelling system. All participants were included in this Mancova. The independent variables used included Level of Preventive Health Behaviour and the Level of Healthiness. Lastly, the following covariates were added; Exercise Behaviour, Emotional Eating Behaviour, Nutritional Information Interest, Nutritional Information Usage, Nutritional Information Knowledge, Daily Preventive Behaviour Likelihood, Health Preventive Behaviour Frequency, Preventive Health Behaviour Reason, Health Consciousness, Health Knowledge, Age, Gender, Ethnicity, Occupation, Income and Country of Residence. These covariates were expected to have the biggest influence on a participant's response to their overall Attitude Towards the Label.

There was a significant interaction effect between The Level of Healthiness and the Level of Preventive Health Behaviour on Attitude Towards the Label ( $df=1$ ,  $F=4.87$  and  $p=0.028$ ). As illustrated in Figure XI.

Figure XI

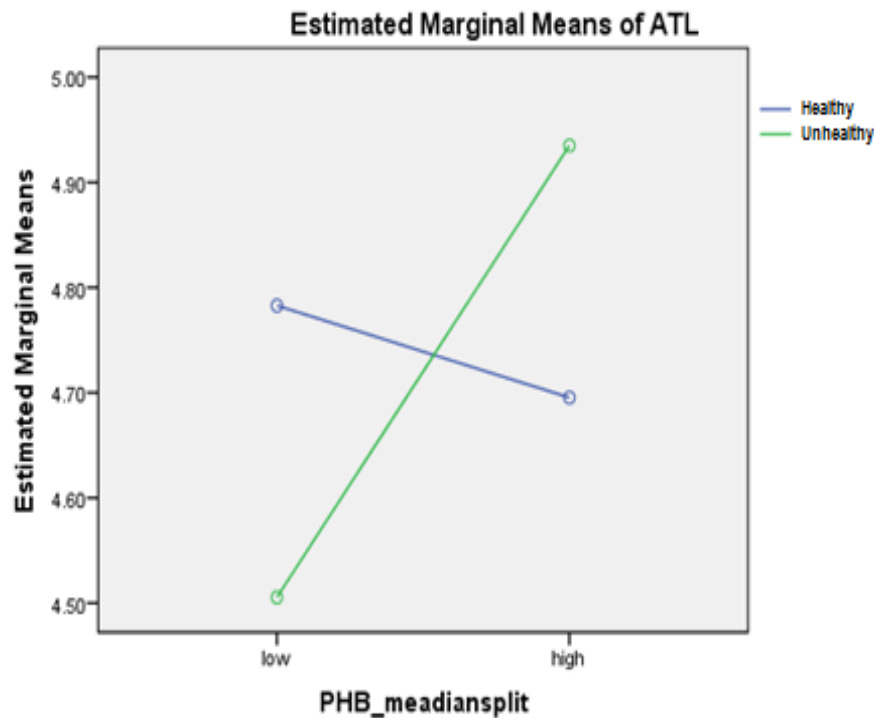


Figure XI. illustrates that participants with a high level of Preventive Health Behaviour have a higher Attitude Towards the Label on an Unhealthy product ( $\mu = 4.94$ ,  $\sigma = 1.18$ ) than on a Healthy product ( $\mu = 4.71$ ,  $\sigma = 1.34$ ). However, the contrary occurred for a participant with a low level of Preventive Health Behaviour; they have a higher Attitude towards the Label on a Healthy product ( $\mu = 4.78$ ,  $\sigma = 1.08$ ), than an Unhealthy product ( $\mu = 4.51$ ,  $\sigma = 1.26$ ).

This finding shows that regardless of the label, the difference in the energy content of the product (either high or low) and their level of Preventive Health Behaviour had a considerable effect on whether the participant found the label useful and understandable. This is communicated in more detail on page 101. The major difference in means was between the Unhealthy label and the Level of Preventive Health Behaviour. As a result, a participant with a Low level of Preventive Health Behaviour had a much lower Attitude Towards the Label than a participant with a High level of Preventive Health Behaviour ( $\mu = 4.94 - \mu = 4.51$ ). This was largely because participants with Low levels of Preventive Health Behaviour are more likely

to assume that a sandwich is healthy and would therefore be more surprised at the high energy figures presented on the sandwich. On the other hand, participants with high levels of Preventive Health Behaviour are likely to be more aware of the variation in nutritional information in sandwiches which may result in a higher Attitude Towards the Label. Also, these participants are more likely to believe and trust an overestimated energy component than an underestimated energy component.

This shows that participants with a high Preventive Health Behaviour find front-of-pack labelling useful on Unhealthy products, which emphasises the importance it plays on consumption behaviour. Regardless of the label, the participant was shown that their Attitude Towards the Label alters depending on the nutritional figure displayed. This significant difference in means shows that even consumers with a low level of Preventive Health Behaviour detect the nutritional figures on a label to some extent and prefer to see lower energy components. However, this is the opposite for high level of Preventive Health Behaviour participants. As explained further in the Discussion on page 99.

Secondly, whilst recording the Sample Characteristics it was noted that the price consumers would Actually Pay and the price they would Expect to Pay varied greatly. Therefore, a Mancova was conducted to determine if the Label had an influence on the overall price perception of a product. This finding was not significant at the 0.05 level however the Label had an almost significant main effect on how much the participant would expect to pay for the product.

The interaction effect of both the Label and Level of Healthiness ( $df=7$ ,  $F= 1.85$ ,  $p=0.077$ ) and the Label and level of Preventive Health Behaviour ( $df=7$ ,  $F= 2.01$  and  $p= 0.053$ ) were explored. However, because the Mancova did not look into the effect of individual labels it is hard to determine the actual price perception of certain labels.

The results from the Hypothesis testing determined participants' Attitude Towards the Running and Walking label. However, the study did not look into the effect of the Traffic Light label in great detail. Therefore a Mancova was carried out which included the independent variables Label (Traffic Light and Running) and the level of Healthiness along with the covariates: Weight Locus of Control, Nutritional Information Interest, Nutritional Information Usage, Nutritional Information Knowledge, Self-Efficacy, Self Esteem, Self Esteem State, Pleasure, Daily Preventive Behaviour Likelihood, Healthy Preventive Behaviour Frequency, Emotional Eating Behaviour, Exercise Behaviour, Preventive Health Behaviour Reason, Health Consciousness and Health Knowledge.

There was a significant interaction effect between the level of Healthiness and the Label on Attitude Towards the Label when comparing the Traffic Light label with the Running label ( $df=1$ ,  $F=12.399$  and  $p=0.001$ ). Figure XII. illustrates this.

Figure XII.

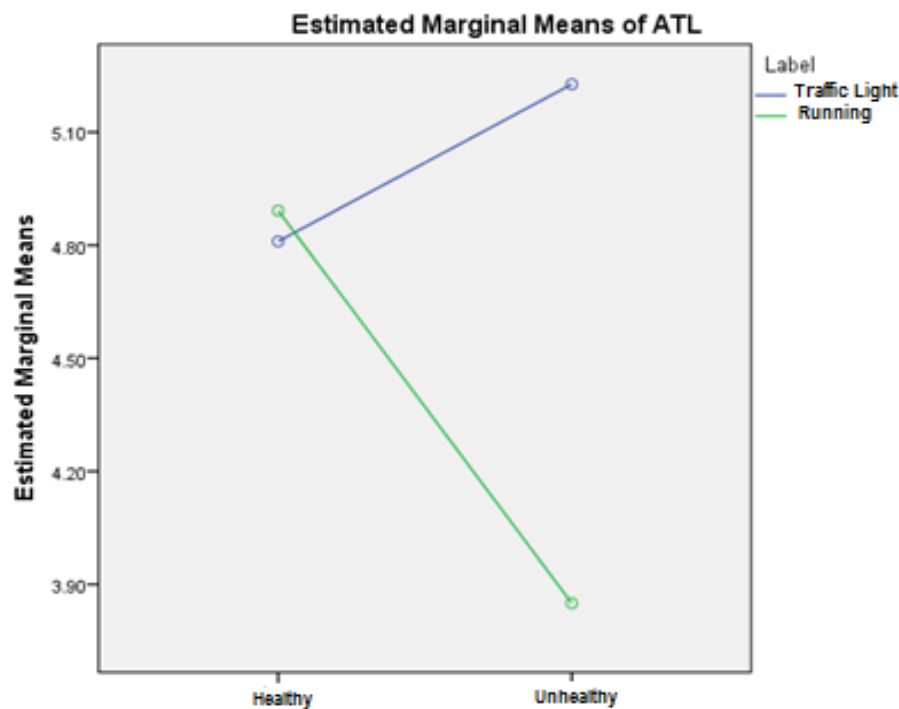


Figure XII. illustrates that if the label is Healthy, there is little difference in means between the Traffic Light label ( $\mu=4.81$ ,  $\sigma=0.81$ ) and the Running label ( $\mu=4.89$ ,  $\sigma=1.29$ ). However, when the condition is Unhealthy there is a significant difference in means between the Traffic Light label ( $\mu=5.23$ ,  $\sigma=1.21$ ) and the Running label ( $\mu=3.85$ ,  $\sigma=1.33$ ). This variance in means between these two labels illustrates that the participants had a higher Attitude Towards the Traffic Light label as opposed to the Running label.

Another reason why the Traffic Light label is viewed as a deterrent and more likely to encourage healthy behaviour than the Running label is that the label is more understandable. Although the label is complex and has many components, the colours make it straightforward and easy to interpret. Alternatively, the Running label has only one component which aims to alarm consumers about the amount of exercise required to burn off a product. For those who do not have prior knowledge of running, this label is likely to be harder to understand and more difficult to relate to.

This finding is useful in understanding which labels are considered more understandable and which will aid all consumers. Although these findings do not support the results from the Hypothesis testing, it is evident that the Running label was less effective than predicted at deterring consumers from products. It was found that many participants did not relate to this label as well as expected.

Another interesting finding existed between the level of Healthiness and the Label on Healthy Behaviour Likelihood. Although this interaction effect was not significant at the 0.05 level it was close to it ( $df=1$ ,  $F=3.18$  and  $p=0.077$ ). Figure XIII. below illustrates this

Figure XIII.

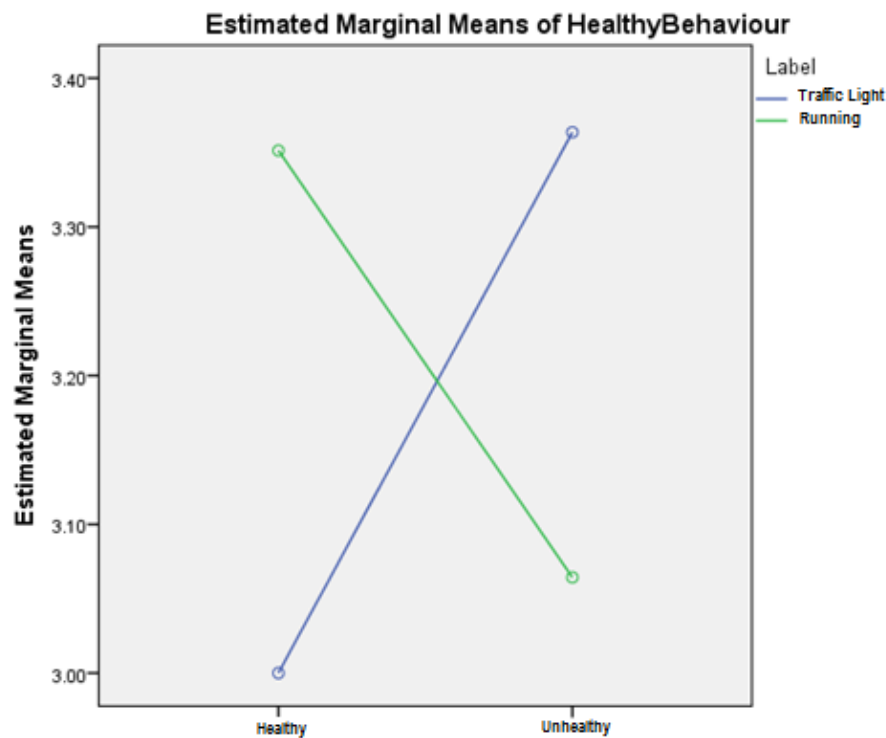


Figure XIII. shows that if the condition is Healthy the participant will be more likely to partake in Healthy Behaviours after consumption with the Running label ( $\mu = 3.35$ ,  $\sigma = 1.2$ ) than if presented with the Traffic Light label ( $\mu = 3.00$ ,  $\sigma = 0.85$ ). However, this was the opposite when the participant was given a product from the Unhealthy condition. When presented with the Running label ( $\mu = 3.06$ ,  $\sigma = 0.94$ ), they were less likely to perform Healthy Behaviour after consumption than if they were presented with the Traffic Light label ( $\mu = 3.36$ ,  $\sigma = 1.14$ ).

This interaction effect shows that the Running label is more effective in aiding unhealthy consumers to eat Healthy foods, rather than deterring them from Unhealthy foods. Reasons for this is that a person is likely to perceive the smaller amount of time recommended to burn off the product as more achievable and therefore they are more likely to partake in Healthy Behaviours (like exercising after consumption). However, if a participant is presented with a large amount of time recommended to burn off the product they are likely to view it as less



achievable and therefore feel discouraged from partaking in Healthy Behaviours. As explained in the Discussion on page 100.

Interestingly, when a participant was presented with a Healthy Traffic Light label which displayed only greens and oranges, the label is perceived as positive and therefore a participant is less likely to feel the need to partake in Healthy Behaviours if they consume the product. However, the Unhealthy Traffic light condition displays predominantly red and orange and therefore has negative connotations, which is likely to encourage consumers to avoid the product or exercise after consumption.

Lastly, the effectiveness of the Walking label in the Hypothesis testing sparked interest into researching further to determine how effective it was when comparing it to the Traffic Light label.

Two Mancovas were conducted to determine the effect that both labels had on participants. Firstly, the interaction effect between the Label and level of Healthiness was investigated to work out a participant's overall Healthy Behaviour Likelihood.

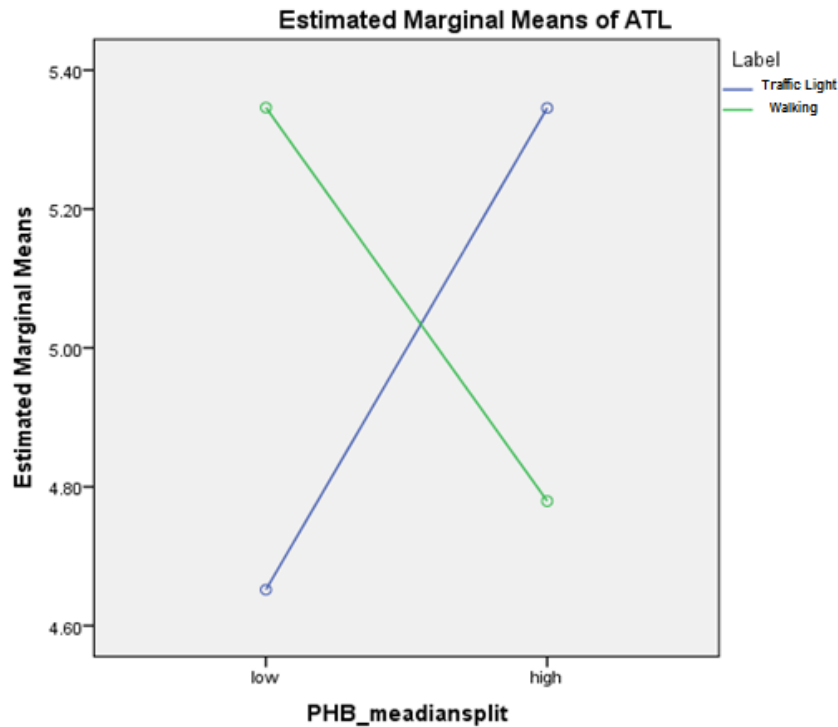
Although there was no significant interaction effect, this Mancova concluded that the type of Label had a significant main effect on the participants' Healthy Behaviour Likelihood. A participant who was shown the Walking label was significantly more likely to partake in Healthy Behaviours than participants who were shown the Traffic Light label ( $df=1$ ,  $F=9.7$  and  $p=0.006$ ).

This finding supports the results from the Hypothesis testing and proves the effectiveness of the Walking label compared to the Traffic Light label.

Next, a Mancova was carried out to determine if the participant's level of Preventive Health Behaviour had an interaction effect with the type of label on their Attitude Towards the Label.

There was a significant interaction effect. Figure XIV. illustrates this ( $df=1$ ,  $F=9.37$  and  $p=0.002$ ).

Figure XIV.



This shows that if a participant reported to have a low level of Preventive Health Behaviour, they have a higher Attitude Towards the Walking label ( $\mu= 5.35$ ,  $\sigma=0.926$ ) than the Traffic Light label ( $\mu= 4.65$ ,  $\sigma=1.17$ ). Therefore they found the Walking label more understandable and readable than the Traffic Light label. However, the opposite was true for participants who reported to have high levels of Preventive Health Behaviour. They had a higher Attitude towards the Traffic Light label ( $\mu= 5.35$ ,  $\sigma=0.84$ ) compared to the Walking label ( $\mu= 4.78$ ,  $\sigma=1.5$ ).

This finding provides useful insight into the effectiveness of the Traffic Light label. It is evident that the Traffic Light label is less valuable than the Walking label (but more valuable than the Running label) for consumers who do not currently partake in Preventive Health Behaviours.

Hence, the walking label is found to be the most effective label in this study at aiding consumers to make healthier food choices.

## 10.0 DISCUSSION

This research has demonstrated the need for a simpler and more understandable nutritional labelling system to be put on products worldwide. Prior to this study, it was found that consumers considered terminologies on food labels advanced and technical (Wandel, 1997). These findings align with the present study which found the current global labelling system ineffective. The Daily Intake label was unable to effectively communicate the nutritional components of food products with consumers. Reasoning for this is theorised by Drichoutis et al. (2006) who states “consumers tend to perform poorly with manipulation of quantitative nutrient information.” (p.7). However, this form of communication remains to be the most frequently used around the globe.

Another major issue with the current nutritional labels is the visibility of the nutritional label itself. Many consumers have limited time to shop and require labels that are easy to understand and read. Past research has found that more than 70% of consumers believe the labelling system needs to change to make it easier to understand (Kristal, Levy, Patterson, Li and White, 1998).

The notion of exercise labelling was found to be more effective than basic caloric information at deterring consumers from high caloric food labels. Khamsi (2013) supports the theory and notions that consumers ordered less unhealthy foods when the recommended exercise expenditure is placed on the product. However, this study further expands on the aforementioned research, by developing an understanding of how these labels effectively aid consumers in making healthier food choices.

Accumulating an extensive collection of Front-of-Pack nutritional labels into one study enabled this research to reveal a comprehensive understanding of the value of each labelling system.

The difference in responses from the 14 manipulations meant this research recognized which forms of communication best assisted different types of consumers into making healthier food choices. It is, therefore, apparent from substantial differences between the means that some labels are considerably more effective than others.

#### *Attitude Towards the Label*

This research has highlighted the major influence a nutritional label has on consumer behaviour and their way of thinking. Level of Preventive Health Behaviour was a key determinant of a participant's response to labels. A participant who reported low levels of Preventive Health Behaviour had a higher Attitude Towards the Walking label than the Running or Traffic Light label. However, participants who reported having high levels of Preventive Health Behaviour had a lower Attitude towards the Walking label, in comparison to the Running and Traffic Light label.

These conclusions are consistent with past research, which highlights, the importance of subjective and relevant communication. Studies have found that a label, which is relatable, to the consumer is the most effective. As they are more useful in aiding people to make consumption choices, regardless of how invested they are in health (Nutbeam, 2006).

The discrepancies in Attitude Towards the Label make it difficult to determine which label is the best to implement for mainstream use. It is evident from the extensive range in research that consumers who lack a healthy lifestyle are most in need of an understandable, relatable label. Literature states that people are becoming less food literate and are urgently in need of a relatable, simplistic labelling system without the technical details (Migone, 2012). Therefore, it is best to consider those who have not yet adopted a healthy lifestyle as the target market for front-of-pack nutritional labelling. In this case, the Walking label would be the most beneficial

front-of-pack labelling system as it relates to this group of overweight, illiterate consumers who are most in need of understandable nutritional information.

#### *Purchase Intention:*

This research has gained insight and helped to understand what factors influence a consumer to purchase a product. Past literature found that nutritional label usage affects purchasing behaviour because it influences valuations and perceptions of a product. Consumers who read food labels are likely to be more conscious of the caloric information and aim to avoid the unhealthy elements in food products (Drichoutis, Lazaridis and Nayga, 2006).

These findings effectively correspond with results from this study, and demonstrate that consumers who have an unhealthy lifestyle are still conscious of the nutritional information displayed on a product. However, Drichoutis et al. (2006) explains this could be due to the Taste-nutrition trade off. "Consumers may prefer the immediate gratification offered by a tasteful product rather than the long run benefits of a nutritious product". This information helps to explain why an unhealthy consumer would prefer not to see the high nutritional figures. The taste-nutrition trade off predicts they are more likely to choose taste over nutrition; although they are likely to be aware the product is bad for them, they would rather not be shown the nutritional information. In turn, these consumers reported having a higher Purchase Intention towards No label compared to the Running label. This was a clear contradiction for those invested in a healthy lifestyle, who prefer products which display well-defined nutritional information. This can also be explained by the taste-nutrition trade off. These consumers are more than likely to choose the nutritional aspect over the taste, or at least consider the nutritional information when making a purchase decision. Thus, they prefer to have the nutritional information present on food products. This successfully clarified why consumers

maintaining a healthy lifestyle had a higher Purchase Intention towards the Running label compared to No label.

Previous studies concluded that the healthier a product is perceived, the greater the Purchase Intention (Kozup, Creyer and Burton, 2003). However, when investigating what bearing Weight Locus of Control had on Purchase Intention, this finding was not accurate. Those who reported having a low (external) Weight Locus of Control did not report any real difference in Purchase Intention between the Unhealthy product and a Healthy product. While, those who reported having high (internal) Weight Locus of Control had a predictably higher Purchase Intention towards the Healthy condition. Correspondingly, past literature surmised that individuals with an internal locus of control are more likely to eat a well-balanced diet and exercise regularly (Cobb-Clark, Kassenboehmer and Schurer, 2012). The study explained, “Those with an internal locus of control make more health investments than their external counterparts because they get more pleasure out of eating healthy food, exercising regularly or eating breakfast in the morning” (p.29). Externals tend to lack motive and value out of the idea of adopting a healthy lifestyle. This is likely to prevent them from caring about the nutritional value of food products, and results in a lack of difference between their Purchase Intention of the Healthy and Unhealthy product in this study.

It is evident that nutritional information has a major influence on Purchase Intention. Although the product never changed, participants overall likelihood to purchase the product did. This key finding has helped to fill the gap in understanding a consumer’s motive to purchase a product. It enables us to further understand the determinants of nutritional label usage and the effect that nutritional labelling has on purchase behaviour.

*Attitude Towards the Act:*

Image and colour-based labels were expected to be more understandable and, therefore, more effective at deterring consumers from Unhealthy products. This is in accordance with Drichoutis et al. (2006) who maintains that the use of bold text, coloured nutrition panels, and whole numbers instead of decimals are the most effective ways to communicate the nutritional information of a food product.

This study found that consumers with healthy lifestyles had an adverse view towards consuming products which displayed candid nutritional information. When comparing label attitudes between high and low Preventive Health participants, the Running, Walking and Traffic Light label had a lower Attitude Towards the Act with consumers who sustained a healthy lifestyle. This reveals that health-conscious consumers are more likely to exercise and regret consuming an unhealthy food product displaying a recommended running expenditure, or overpowering red colours – and a subsequent negative connotation - than greens. This is consistent with prior research, which found that, restricted eaters (those who limited their unhealthy food intake) were more likely to feel guilty after consuming an unhealthy product than their unrestricted counterparts (Provencher, Polivy and Herman, 2009).

This finding provides understanding into the importance that relevant nutritional information plays on consumer responses. Consumers who have not yet adopted a healthy lifestyle are also likely to lack motivation to exercise or to cut certain nutritional components from their diet (Nutbeam, 2006). It was, therefore, anticipated that they would also lack a full understanding of the consequence of consuming the unhealthy food product.

Findings indicated that a participant who has adopted a healthy lifestyle was more than likely to exercise when shown either the Running or Walking label. However, when repeatedly presented with this information, unhealthy consumers are expected to understand and begin to

adopt a more active and healthy lifestyle. This finding highlights the importance that a consumer's lifestyle plays on consumption behaviour, and accordingly, paves the way for future research to be undertaken.

*Attitude Towards the Product:*

The participants presented with an Image of a person either Running or Walking on a Healthy product had a positive Attitude Towards the Product, compared with participants shown the Caloric Information label on a Healthy product. This anticipated finding reflects a similar concept found in past literature. Veer and Rank (2012) maintain that images are a more than effective form of communication in comparison to all other forms of text-based communication. However, a participant's Attitude Towards the Product decreased significantly when the product came from an Unhealthy condition. Therefore, participants reported the high nutritional values less appealing in the Image condition.

Results prove that Image based labels are more effective than Information based labels in helping consumers make informed food choices. This finding is a fundamental discovery in understanding consumption behaviour associated with food labels. It is evident from this study that Information based labels, the current leading method of front-of-pack labelling systems around the world, are less influential and beneficial to consumers than Image based nutritional labels.

These results have conveyed the influence Weight Locus of Control has on participants' overall lifestyle choices. Saltzer (1982), states that WLOC is a major determining factor in understanding consumption behaviour and diet choice. The conclusion from this study supports previous findings and proves that participants with external Weight Locus of Control



have less concern for the nutritional component of a food product. This research found that those who believe they do control their own weight reported a significantly lower Attitude Towards the Product in the Unhealthy condition. However, those who believe they do not control their own weight showed no real difference between the Healthy and Unhealthy condition. Drichoutis et al. (2006) states that provision of health related information does not always lead to healthier purchase and consumption choices.

This finding has demonstrated that consumers who believe their lifestyle choices have a direct effect on their weight, make a conscious effort to avoid high caloric food products. It is important to understand that not all consumers who have an internal Weight Locus of Control are unhealthy. However, these consumers are less cautious of the unhealthy foods they consume.

#### *Healthy Behaviour Likelihood*

The Running label was predicted to have more of an affect than No label on the participant's Healthy Behaviour Likelihood. This was true for those who maintained to have a high level of Preventive Health Behaviour. However, those who had a low level of Preventive Health Behaviour did not express any significant difference between the two labels. Although this was unexpected prior to conducting the study, the research obtained upon analysis helps explain this finding. It exemplifies once again the overall importance that relevance plays on the effectiveness of a label. A consumer who has an unhealthy lifestyle is unlikely to react well to a label which tells them they are "required to run for a set amount of time to burn off a product" because they do not regularly partake in this behaviour.

Thus, further statistical analysis testing determined which label was most effective at encouraging consumers with an unhealthy lifestyle to encourage Healthy Behaviour. The Walking label was the most effective, followed by the Traffic Light label. This finding enables us to understand to some extent the mind-set of unhealthy consumers. It is apparent those who are yet to adopt a healthy lifestyle react to labels differently than those currently invested in their health.

This study also concluded that the healthiness of a product had an effect on participants' Healthy Behaviour Likelihood regardless of the label. Participants were, therefore, more than likely to exercise or avoid a product if it displayed a high caloric figure.

The results from this study help to understand the effects a label and the nutritional information have on a consumer's anticipated behaviour. Even though the picture of the sandwich remained unaltered, the information manipulated people's predicted actions and perceptions of the product. A key finding obtained from this study is the differences in response to certain labels dependent on personal factors.

Although the presence of the Running label is useful at deterring some consumers from purchasing high caloric food products, it will be less effective at encouraging unhealthy consumers to purchase healthier foods. Therefore, the running label is not the best labelling system for the wide spectrum of food products available on the supermarket shelf. Overall, the Walking label was the most useful labelling system in this study.

### *10.1 Policy implications*

The extremely low recall rate of the Daily Intake label- one of the current, global, front-of-pack nutritional labelling systems – underlines major policy implications on the effectiveness of this

label. Ye and van Jaaij (1997) maintain the likely cause of a consumer's inability to recollect this labelling system is due to the notion of the Familiarity Effect. Consequently the low recall rate (20% and 23%) meant the effectiveness of this label was not able to be analysed. Adams (2000) states that a minimum of 30 participants need to exist in each manipulation in order to meet the requirements of the Central Limit Theory. Any less than this number is likely to provide inaccurate and unreliable results. The Daily Intake Guide had a 20% and 23% recall rate compared to the Walking label which had a 93% and 85% recall rate, and the Running label which presented an 89% and 95% recall rate. This difference in recollection between a familiar label (Daily Intake) and an unfamiliar label (Running and Walking) itself is a substantial finding. This study only collected 413 responses, however; it demonstrates major trends in the wider population. Therefore, it is recommended that a new front-of-pack nutritional label is mandatorily applied on supermarket products. This will assist consumers in making healthier consumption choices.

However, a major obstacle in this concept's establishment is after implementing a new label, over time the Familiarity effect may wear off, and labels with a high recall rate in this study will cease to be as obvious and visible. This will lead to a decrease in recollection, and it will no longer be useful to consumers, much akin to the decline in familiarity of the Daily Intake Guide. Blair (2000) explains a similar theory relating to overexposure called the Wearin and Wearout effect. It can be described in four steps. Firstly, the stimulus is effective in the initial stages, and over time its effectiveness continues to increase as more consumers are exposed to it. However, eventually it begins to have little or no effect on the participants before a negative response starts to stem from the stimuli. In order to overcome this, a new labelling system would have to be implemented regularly, so consumers do not become over-familiarized with the label. This would require enormous costs, which would be unsustainable and not viable long-term.

In order to minimize the negative impact of the Familiarity Effect a label, which provides the most straightforward, useful and relatable information, is likely to be the most beneficial and long-lasting successful front-of-pack nutritional label. According to Ye and van Jaaij (1997) the risks of overexposure is minimized when consumers are provided with relevant, interesting information. Findings from Hypothesis 1 found those with low levels of Preventive Health Behaviour had a higher Attitude Towards the Walking label than the Running label. Walking is a more popular and commonly-performed activity than running. This, therefore, proves that those with low Preventive Health Behaviours understand and deem the Walking label more useful than the Running label. The difference in means of the Walking and Running label was much greater than the difference in means between participants with a high level of Preventive Health Behaviour of the Running and Walking label. Although these participants had a higher Attitude Towards the Running label, the difference between these means was less sizeable. Therefore, if New Zealand implements either exercise labelling system, the Walking label would be more beneficial and effective in aiding both high and low health active consumers.

The successful recall rate of the exercise labels could be due to their novel in nature aspect. As explained by Veer and Rank (2012), novel images are more likely to be processed cognitively, representing a closer depiction of reality and drawing greater awareness and attention to the issue. In a study conducted by Veer and Rank (2012), visual images have a greater persuasive impact on attitudes and intentions to quit smoking. This concept was found to apply to this study, meaning images of a person running or walking were more effective than information-based labels in encouraging participants to avoid unhealthy food products.

Every consumer burns and metabolizes food and drink at different rates, although, it is impossible to develop a label which identifies personally with individuals. According to Fisher (2010) body mass and workout intensity directly affect the number of calories a person uses during exercise. Therefore, a recommended energy expenditure needed to be calculated based

on an average weight, height and running or walking speed. For someone who falls considerably below or above this threshold, the nutritional figures would not accurately reflect their overall expenditure. This infers that some labels used in this study depict incorrect nutritional information, which could raise a concern for the government. However, it is evident that this issue is impossible to overcome, and the current front-of-pack labelling system, the Daily Intake label, is based on an average consumer's diet, universally applied to products.

## *10.2 Limitations*

Only one food product was presented to the participants of this study. This made it difficult to predict how effective the nutritional labels would be on other types of food. Research found a sandwich to be the most versatile, readily-available and varied food product in its health benefits. Although, usually is stereotypically perceived as a healthy choice when compared to other on-the-go items which tend to be high in fats and sugars. This notion may have influenced the results of this study as the product is more likely to be consumed by health-conscious individuals, and would less likely reflect the opinion of a non-active unhealthy person. In order to ensure these findings reflect a broad sample of consumers, a variety of different food products should be used in future studies. This will ensure the food preference of a large sample is met.

Also, in this study the difference in nutritional value simply doubled and was labelled as an "Unhealthy" product. Realistically, the sandwich itself would have had to appear twice as unhealthy or at least reflect a depiction of an unhealthy sandwich. Participants were shown only one manipulation, which would not have had a direct effect on the overall results. However, because the nutritional information was intentionally underestimated or overestimated, consumers who were knowledgeable about nutrition may have not trusted the information displayed on the labels. The covariate Pleasure was one of the biggest influences

on the participant's responses. This multi-item scale was based on how the participant was currently feeling. Therefore, their overall Pleasure is likely to fluctuate dependent on a range of both external and internal factors. Because this covariate has a significant influence on a participant's response, it is expected to have an effect on the overall results obtained from this study. To ensure the results were accurate, and the sample reflected the whole population, this study should ask how the participant is feeling at the beginning and the end of the survey. This study only asked participants at the end of the survey, which may have resulted in an overall low pleasure rating as participants had just committed 15-20 minutes of their time completing a survey.

Consequently, because of the non-normal distribution, this study had to use a stricter level of significance to ensure the results were representative of the population. This study ensured the p value was always under 0.05, and consequently 0.052, a p value for Hypothesis 5, was unacceptable, and this hypothesis had to be rejected. The abnormal distribution was due to the small sample size. To ensure this does not happen again, it is recommended a greater sample size is used. This will account for the unforeseeable large amount of unusable data. It will also create a data set that is representative of the population.

### *10.3 Future Research*

This data set mostly included participants from the United States of America (70 %) and New Zealand (25%). In order to conduct a study which reflects a global population, future studies should seek participants from a range of different countries. This would provide more reliable results as findings would gauge the effects of nutritional labelling on an international level. Although this study has significant results, it is possible that the data set would vary if the study was conducted in another country. Different cultures may not understand particular labels

and information. Therefore, the nutritional label may be an ineffective international labelling system.

Because of the ethical concerns, people under the age of 16 could not participate in this study. Whilst this study did obtain a sufficient group of participants between the ages of 16-18, future findings could delve deeper into understanding children's responses to different labelling systems. It is possible younger people would respond to the nutritional labels differently to the participants from this study.

This research has opened doors into understanding consumers as a whole. Not only can it be used to further advance an understanding on the consumption behaviour associated with nutritional labels, but it can be used to develop other fields, which require the understanding of consumption behaviour in its entirety. With consumerism rapidly increasing and becoming a part of everyday life, this research has laid a foundation to gauge why people consume the products they do. When information is communicated effectively, it has the ability to change consumption behaviour entirely. There is also a possibility to examine other fields, not solely labelling for food products. For example, this research may raise awareness about the hazards and negative attributes of fuel consumption, energy emissions and alcoholism. For instance, "Over three years this car will emit more Co<sub>2</sub> than a forest the size of Christchurch" or "This bottle of vodka will increase your risk of liver failure by 0.02%". Marketing tactics are responsible for the growth of consumerism and excess consumption of unnecessary material objects. It is time to use the persuasive power of marketing to benefit the general public, and enable consumers to live healthier lifestyles.

To properly understand the consumption behaviour of the unhealthy portion of the population, a qualitative study should be conducted with formal in-depth interviews. This will help to formulate a detailed account on the effects different labels have on their attitudes. This study

has gained a fair idea of what labels influence consumers the most, but it lacks deep understanding of why the labels are more effective than others. Conducting face-to-face interviews should enable future research to gain deeper insight into understanding consumption behaviour associated with nutritional labels.

## 11.0 CONCLUSION

The aim of this study was to determine which front-of-pack labelling system is most effective in improving consumer food choices. This study successfully provides valuable insight into understanding the influence nutritional labels have on consumption choices. This research highlights a significant contrast in responses between those who actively make healthy lifestyle choices and participants who do not. While it is important to appeal to the largest-possible group of consumers, it is also imperative that the front-of-pack label is understood and used primarily by those who lack health literacy, knowledge and understanding.

Knowledge about the healthiness of foods needs to be sought and systematically attained in a society facing an increased prevalence of overeating and obesity (Provencher, Polivy and Herman, 2009). Although consumers leading unhealthy lifestyles are the hardest to target as they are less invested in healthy behaviours, understanding these consumers is pivotal in improving consumption choices, a person's lifestyle and eventually society as a whole. As Sayid (2013) states "Clear, simple, consistent front-of-pack nutritional labelling has an important role to play in making it easier for people to eat healthily, but it is no good doing this in isolation, it has got to be part of a wider Government strategy to tackle obesity and diet-related disease" (p.1). The sooner society recognises the potential to improve the lives of people around the globe, the easier it will be to develop a nutritional label which is connected to eating.



## 12.0 REFERENCES

- Aaker, D. (1991), *Managing Brand Equity: Capitalizing on the Brand*, The Free Press, New York, NY.
- Adams, W.J. (2000). The life and times of the central limit theorem. *History of Mathematics*, 35(2), 1-204.
- Age UK. (2012). Fat sugar and salt. *Age UK*. Retrieved from <http://www.ageuk.org.uk/health-wellbeing/healthy-eating-landing/healthy-eating-overview/fats-sugars-salts/> on the 23/05/12
- Anders, K. (2013). What is fat? How much fat should I eat? *Medical News Today*. 7<sup>th</sup> November 2013. Retrieved from <http://www.medicalnewstoday.com/articles/141442.php> on the 12/09/13.
- Arias-Bolzmann, L., Chakraborty, G and Mowen, J. C. (2002). Effects of Absurdity in Advertising: The Moderate Role of Product Category Attitude and the Mediating Role of Cognitive Responses. *Journal of Advertising*. 29(1), 35-48
- Baker, M. J and Churchill, G, A. (1977).The Impact of Physically Attractive Models on Advertising Evaluations. *Journal of Market Research*, 14, 538-555.
- Barimen, A. (2004). Psychology of Colour. *Skribe Productions*. 6<sup>th</sup> February 2004. Retrieved from <http://www.skribeproductions.com/2012/02/06/infographic-the-psychology-of-colour/> on the 12/5/13.
- Barnett, V. Lewis, T. and Abeles, F. (1979). *Outliers in Statistical Data*. Department of Mathematics, Kean College of New Jersey, Union, N.J. September 1979, 72-73 retrieved from

[http://www.physicstoday.org/resource/1/phtoad/v32/i9/p73\\_s1?isAuthorized=no](http://www.physicstoday.org/resource/1/phtoad/v32/i9/p73_s1?isAuthorized=no) on the 12/09/13.

Beard, T.C., Nowson, C.A. and Riley, M. D. (2007) Traffic-light food labels. *Medical Journal of Australia*, 186(1), 19-20.

Bearden, W. O., Hardesty, D.M. and Rose, R.L. (2001). Consumer Self-Confidence: Refinements in Conceptualization and Measurement. *Journal of Consumer Research*, 28 (June), 121-134.

Blair, M.H. (2000). An Empirical Investigation of Advertising Wearin And Wearout. *Journal of Advertising Research* 40(6): 95–100.

Blakely, T. (20013). FoodSwitch Smartphone consumers beat industry to better labelling. *Otago University Public Health Expert*. 22 August 2013. Retrieved from <https://blogs.otago.ac.nz/pubhealthexpert/2013/08/22/foodswitch-smartphone-consumers-beat-industry-to-better-labeling/> on the 22/08/13.

Bleich, S. (2011). If '250 Calorie' Label Doesn't Stop You, '50 Minute Jog' Label Might. Fox News. 16<sup>th</sup> December 2011. Retrieved from <http://www.foxnews.com/health/2011/12/16/if-250-calorie-label-doesnt-stop-50-minute-jog-label-might/#ixzz2OmNwPcXv> on the 13/07/12.

Brimelow, A. (2007). Public want food 'traffic lights'. *BBC News*. 27<sup>th</sup> Feburary 2007. Retrieved from <http://news.bbc.co.uk/2/hi/health/6397187.stm> on the 24/05/12.

Burton, S., Garretson, J. A., Velliquette, A. M. (1999). Implications of Accurate Usage of Nutrition Facts Panel Information for Food Product Evaluations and Purchase Intentions. *Journal of the Academy of Marketing Science*, 24(4), 470-480.

- Burton-Bradley, R. (2012). Sugar trap: Critics say Healthy Tick deal too sweet for Heart Foundation to ignore. *News.com*. 29<sup>th</sup> January 2012. Retrieved from <http://www.news.com.au/business/sugar-trap-heart-foundation-critics-say-tick-deals-with-nestle-uncle-tobys-mcdonalds-aldi-too-sweet-to-ignore/story> on the 22/10/12.
- Calorie Count. (2013). 13<sup>th</sup> April 2013. Retrieved from <http://caloriecount.about.com/> on the 26/04/13.
- Campbell, D. (2013). Food packaging 'traffic lights' to signal healthy choices on salt, fat and sugar. *The Guardian*. 19<sup>th</sup> June 2013. Retrieved from <http://www.theguardian.com/society/2013/jun/19/traffic-light-health-labels-food> on the 20/06/13.
- Carter, O., Mills, B and Phan, T. (2011). An independent assessment of the Australian food industry's Daily Intake Guide 'energy alone' label. *Australian Journal of Health Promotion*, 22(1), 63-67.
- Chappman, K. and Watson, W. (2013). Out with traffic lights, in with stars – next steps for food labelling by Kathy Chapman. *Cancer Society*. Retrieved from <http://www.cancercouncil.com.au/65841/news-media/blog/healthy-living-cancer-prevention> on the 12/06/13.
- Chi Health. (2011). Are ready to eat foods healthy. *Chi Health and Wellbeing*. Retrieved from <http://www.chihealth.in/articles/Are-Ready-To-Eat-Foods-Healthy/812> on the 24/5/12
- Choice. (2011). Daily intake percentage labels discredited. 28<sup>th</sup> of November 2011. Retrieved from <http://www.choice.com.au/consumer-action/food-labelling/better-food-labelling-campaign/percentage-daily-intake-guides-discredited.aspx> on the 27/05/12

- Cobb-Clark, D. A., Kassenboehmer, S.C. and Schurer, S. (2012). Healthy Habits: The Connection between Diet, Exercise, and Locus of Control. IZA Discussion Paper No. 6789 August 2012.
- Collier, A. Cotterill, A. Everett, T. Muckle, R. Pike, T and Vanstone, A. (2010). Understanding and influencing behaviours: a review of social research, economics and policy making in Defra. DEFRA, London.
- Department of Health. (2013). Final design of consistent nutritional labelling system given green light. *Govt.UK*. 19<sup>th</sup> June 2013. Retrieved from <https://www.gov.uk/government/news/final-design-of-consistent-nutritional-labelling-system-given-green-light> on the 21/06/13
- Draper, A.K., Adamson, A.J., Clegg, S., Malam, S. Rigg, M. and Duncan, S. (2011). Front-of-pack nutrition labelling: are multiple formats a problem for consumers? *European Journal of Public Health* p.1-5. Retrieved from <http://eurpub.oxfordjournals.org/> on the 14/07/13.
- Drichoutis, A., Lazaridis, P. and Nayga, R.M. (2006) "Consumers' use of nutritional labels: A review of research studies and issues" *Academy of Marketing Science Review* 10.9 (2006).
- Dudding, A. (2012). The new food wars. *Sunday Star Times*. 11<sup>th</sup> March 2012. Retrieved from <http://www.stuff.co.nz/sunday-star-times/latest-edition/6556052/The-new-food-wars> on the 24/05/12.
- EUFIC (2011). Consumer response to portion information on food and drink packaging - A pan-European study. EUFIC Forum n° 5.
- Facility of Public Health. (2008). Traffic light food labelling. August 2008. Retrieved from [http://www.fph.org.uk/uploads/ps\\_food\\_labelling.pdf](http://www.fph.org.uk/uploads/ps_food_labelling.pdf) on the 27/05/12.

- Feunekes, G.I.J., Gortemaker, I.A., Willems, A.A., Lion, R. and Kommer, M.V.D. (2008). Front-of-pack nutrition labelling: Testing effectiveness of different nutrition labelling formats front-of-pack in four European countries. *Appetite*, 50(1), 57-70.
- Fitzsimons, G. J and Shiv, B. (2001). "Nonconscious and Cognitive Effects of Hypothetical Questions on Subsequent Decision Making," *Journal of Consumer Research*, 28(September), 224-238.
- French, S.A. (2003). Pricing effects on food choices. *Journal of Nutrition*, 133, 841-843.
- Garson, D. G. (2012). Testing Statistical Assumptions. *Statistical Associates Publishing*. Retrieved from <http://www.statisticalassociates.com/assumptions.pdf> on the 22/06/13.
- Goodwin, S.L., Speller-Henderson, L. and Thompson, C. (2006). Evaluating the nutritional label: Its use in and impact on purchasing decisions by consumers. *Journal of Food Distribution Research*, 37(1), 76-80.
- Graham, P., Harker, D., Harker, M. and Tuck, M. (1994). Branding food endorsement Programs: The national Heart Foundation of Australia. *Journal of Product & Brand Management*, 3(4), 31-43.
- Grewal, Dhruv, Krishnan, R., Baker, J. and Borin, N. (1998). The effect of store name, brand name and price discounts on consumers' evaluations and purchase intentions. *Journal of Consumer Research*, (74(3), 331-352.
- Hamilton, M.B. (2009). Online survey response rates and times: Background and guidance for industry. *Super Survey*. Retrieved from <http://www.supersurvey.com/> on the 30/05/12.
- Heart Foundation Tick. (2012). <http://www.heartfoundation.org.nz/healthy-living/healthy-eating/heart-foundation-tick> on the 12/06/13.

- Heatherton, T.F, and Polivy, J. (1991).Development and the Validation of a Scale for Measuring State Self-Esteem. *Journal of Personality and Social Psychology*, 60(June), 895-910.
- Holt, C. L., Clark, E. M., & Kreuter, M. W. (2001). Weight locus of control and weight-related attitudes and behaviors in an overweight population. *Journal of Addictive Behaviors*, 26(3), 329–340
- Hope, J. (2013). Walking is as good for your health as running - but you'll need to do it for longer to get the same benefits. *Mail Online*. 4<sup>th</sup> April 2013. Retrieved from <http://www.dailymail.co.uk/health/article-2303512/Walking-IS-good-health-running--youll-need-longer-benefits.html> on the 10/09/13.
- Janz, N.K. and Becker, M.H. (1984). The Health Belief Model: A Decade Later. *Journal of Health Education Behavior*, 11(1) 1-47.
- Jayanti, R. K and Burns, A. C. (1998). The Antecedents of Preventive Health Care Behaviour: An Empirical Study. *Journal of the Academy of Marketing Science*, 26 (winter), 6-15.
- Kasl SV, Cobb S. (1966). Health behavior, illness behavior, and sick-role behavior. II. Sick-role behavior. *Archives of Environmental Health* 12(4), 531–541.
- Kelly, B., Hughes, C., Chapman, K., Chun-Yu, J., Dixon, H., Crawford, J...Slevin, T. (2004).Consumer testing of the acceptability and effectiveness of front-of-pack food labelling systems for the Australian grocery market. *Health Promotion International*, 24(2), 120-129.

- Khamsi, R. (2013). Tread lightly: Labels that translate calories into walking distance could induce people to eat less. *Scientific American*. 18th March 2013. Retrieved from <https://www.scientificamerican.com/article.cfm?id=labels-that-translate-calories-into-walking-distance> on the 18<sup>th</sup> of March 2013.
- Kleef, E.V., Trijp, H. V. , Paepes. F. and Ferna´ndez-Celemi´n, L. Consumer preferences for front-of-pack calories labelling. *Journal of Public Health and Nutrition*, 11(2), 203-213.
- Kraft, F and Goodell, P.W. (1993). Identifying the Health Conscious Consumer. *Journal of Health Care Marketing*, 13 (Fall), 18-25.
- Kristal, A.R., Levy, L., Patterson, R.E., Li, S.S. and White, E. (1998) Trends in food label use associated with new nutrition labelling regulations. *American Journal of Public Health*, 88(8), 1212-1215.
- Lichtenstein, D. R., Bloch, P.H and Black, W.C. (1988). An investigation of consumer responses to sales promotions in developing markets; A-three country analysis. *Journal of Applied Research?? (JAR)* 38, (May/June), 47-56.
- Madden, J. (2009). Australia's food industry ready for fat, sugar and label challenges. *Food Chemical News*, 51(27), 15-15.
- Madden, J. (2009). Australian food industry seeks to halt front-of-pack labelling review. *Food Chemical News*, 51(5), 23-23.
- Marcus, B. H., Selby, V. C., Niaura, R. S. and Rossi, J.S. (1992). Self-efficacy and the stages of exercise behavior change. *Research Quarterly for Exercise and Sport*, 63(1), 60-66.
- Martin, B.A.S., Veer, E. and Pervan, S.J. (2007). Self-referencing and consumer evaluations of larger-sized female models: a weight locus of control perspective', *Journal of Marketing Letters*, 18(3), 197-209.

- McAuley, E. (1994) Physical activity and psychosocial outcomes. In: *Physical activity, fitness and health*. Eds: Bouchard, C., Shepard, R.J. and Stephens, T. Champaign: Human Kinetics. 551-568.
- McAuley, E., Mihalko, S. L., & Bane, S. M. (1997). Exercise and self-esteem in middle-aged adults: Multidimensional relationships and physical-fitness and self-efficacy influences. *Journal of Behavioral Medicine*, 20, 67–83.
- McDowell, W., Bonnell, C and Davies, M. (2007). *Health Promotion and Practice*. Maidenhead: Open University Press.
- Mesure, S. (2006). Mr Kipling exceedingly upset at ‘traffic light’ food labels. *The independent*. 30<sup>th</sup> June 2006. Retrieved from <http://www.independent.co.uk/news/business/news/mr-kipling-exceedingly-upset-at-traffic-light-food-labels-406100.html> on the 24/05/12.
- Mesure, S. (2006). ‘Traffic light’ labels help health foods. *The Independent*. 26<sup>th</sup> June 2006. Retrieved from <http://gr2tq4rz9x.search.serialssolutions.com> on the 12/07/13.
- Metherall, M. (2011). Canberra rejects traffic light food labels. *The Age*. 1st December 2011. Retrieved from <http://www.smh.com.au/national/health/canberra-turns-off-traffic-light-health-plan-20111130-1o71z.html> on the 24/05/12.
- Migone, P. (2012). Too much junk on our plate. *Essential Mums*. 10<sup>th</sup> October 2012. Retrieved from <http://www.essentialmums.co.nz/family-life/health-nutrition/7803012/Too-much-junk-on-our-plates> on the 21/02/2013.



- Moon, S. (2010). Analysis of Variance and Covariance. *Wiley International Encyclopaedia of Marketing*. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/9781444316568.wiem02017/abstract>.
- Moran, A. P. (2004). Sport and exercise psychology: A critical introduction. New York: Routledge.
- Mooreman, C and Matulich, E. (1993). A model of Consumers' Preventive Health Motivation and Health Ability. *Journal of Consumer Research*. 20 (September), 208-228.
- Mooreman, C. (1990). The Effects of Stimulus and Consumer Characteristics on the Utilization of Nutrition Information, *Journal of Consumer Research*, 17 (December), 362-274.
- Mooreman, C. (1998). Market-Level Effects of Information: Competitive Responses and Consumer Dynamics. *Journal of Market Research*, 35 (February) 82-98.
- Morris, C. (2012). Researchers support traffic light labels. *Otago Daily Times*. 2<sup>nd</sup> February 2012. Retrieved from <http://www.odt.co.nz/campus/university-otago/196412/researchers-support-traffic-light-labels> on the 24/05/12.
- Murry-West, R. (2013) Will the new food labelling scheme get the green light? *The Telegraph*. 28<sup>th</sup> June 2013. Retrieved from <http://www.telegraph.co.uk/finance/personalfinance/consumertips/household-bills/10146645/Will-the-new-food-labelling-scheme-get-the-green-light.html> on the 28/06/13.
- My Fitness Pal. (2013). 21 March 2013. Retrieved from <http://www.myfitnesspal.com/> on the 26 April 2013.
- Neergaard, L. (2011). Food labels need energy star-like ratings for healthy food, says report. *Huffington Post*. 20<sup>th</sup> November 2011. Retrieved from

[http://www.huffingtonpost.com/2011/10/20/food-labels-ratings\\_n\\_1022169.html](http://www.huffingtonpost.com/2011/10/20/food-labels-ratings_n_1022169.html) on the 10/02/13.

Nutbeam, D. (2006). Healthy Literacy as a public goal: A challenge for contemporary health education and communication strategies into the 21<sup>st</sup> century. *Journal of Healthy Promotion International*, 15(3), 259-267.

Nutbeam D and Harris E. (2004). *Theory in a Nutshell: A Practical Guide to Health Promotion*. Sydney: McGraw-Hill, 2004.

ORC Marco. (2003). Restaurant and food labelling focus group research- Summary Report. U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition. March 2003. Retrieved from [http://www.fda.gov/ohrms/dockets/ac/04/briefing/4039b1\\_02\\_Food%20Labeling-Summary.pdf](http://www.fda.gov/ohrms/dockets/ac/04/briefing/4039b1_02_Food%20Labeling-Summary.pdf) on the 03/04/13.

ONE News. (2013). An app a day to keep the doctor away. TVNZ. 9<sup>th</sup> August 2013. Retrieved from <http://tvnz.co.nz/lifestyle-news/app-day-keep-doctor-away-5529582> on the 9/9/13.

O'Neill, M. (2012). Star system food label breakthrough to fight fat. *ABC News*. 28<sup>th</sup> November 2012. Retrieved from <http://www.abc.net.au/news/2012-11-28/star-system-breakthrough-in-food-labelling/4395772> on the 10/02/13.

Oskamp, S. (1965) Overconfidence in case-study judgments. *Journal of Consulting Psychology*, 29(3), 261-265.

Park, J.L. and Capps, O. (1997). Demand for prepared meals by U.S households. *American Journal of Agriculture and Economics*, 79(3), 814-824.

- Philipson, T. (2005). Government perspective: Food labelling. *American Journal of Clinical Nutrition*. Retrieved from <http://www.ajcn.org/content/82/1/262S.full> on the 25/05/12.
- Raghunathan, R. and Irwin, J. (2001). Walking the Hedonic Product Treadmill: Default Contrast and Mood-Based Assimilation in Judgements of Predicted Happiness with a Target Product. *Journal of Consumer Research*, 28 (December), 355-368.
- Rosenberg, M. (1965). *Society and the Adolescent Self-Image*, Princeton, New Jersey: Princeton University Press.
- Rosenstock, I. M. (1974). The Health Belief Model. *Encyclopaedia of Psychology*, 4. 78-80. Washington, DC, US: American Psychological Association; New York, NY, US: Oxford University Press. 508 pp.
- Rotter, J. B. (1966). Generalized expectancies for internal vs. external control of reinforcement. *Psychological Monographs*, 80 (1), 609-618.
- Sacks, G. (2011). Studies should stand up to the food industry on traffic light labelling. *The Conversation*. 1<sup>st</sup> December 2011. Retrieved from <http://theconversation.edu.au/states-should-stand-up-to-the-food-industry-on-traffic-light-labelling-4504> on the 24/02/13.
- Sacks, G., Rayner, M. and Swinburn, B. (2009). Impact of front-of-pack 'traffic-light' nutrition labelling on consumer food purchases in the UK. *Journal of Health Promotion International*, 24(4), 344-352.
- Saltzer, E. B. (1982). The weight locus of control (WLOC) scale: a specific measure for obesity research. *Journal of Personality Assessment*, 46(6), 620-628.
- Sayid, R. (2013). Traffic light food labelling introduced by big supermarkets. *Mirror News*. 19<sup>th</sup> June 2013. Retrieved from <http://www.mirror.co.uk/news/uk-news/traffic-light-food-labelling-introduced-1962760#ixzz2kws6kbJG> on the 11<sup>th</sup> June 2013.

- Signal, L., Lanumata, T., Ni Mhurchu, C., & Gorton D. Front-of-pack nutrition labelling implementation and research: an exploration of stakeholder views. *Health Promotion Journal of Australia* 2012; 23(1), 48-51.
- Shiv, B and Fedorikhin, A. (1999).“ Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making,” *Journal of Consumer Research*, 26(December), 278-292.
- Sonstroem, R. J., & Morgan, W. P. (1989). Exercise and self-esteem: Rationale and model. *Medicine and Science in Sports and Exercise*, 21, 329–337.
- Sweeny, J. C., Soutar, G. N. and Johnson, L. W. (1999). The Role of Perceived Risk in the Quality-Value Relationship: A Study in a Retail Environment. *Journal of Consumer Research*, 75(1), 77-105.
- Swinyard, W.R. (1993). The Effects of Mood, Involvement, and Quality of Store Experience on Shopping Intentions. *Journal of Consumer Research*, 20 (September), 271-280.
- Triggle, N. (2013). Children need more exercise - especially girls, study says. BBC News. Retrieved from <http://www.bbc.co.uk/news/health-23778945> on the 29th August 2013.
- Urbany, J.E., Bearden, W.O. and Weilbaker, D.C. (1988). The effect of plausible and exaggerated reference process on consumer perceptions and price search. *Journal of Consumer Research*, 15 (June), 95-100.
- Veer, E. and Rank, T. (2012). Warning! The following packet contains shocking images: The impact of morality salience on the effectiveness of graphic cigarette warning labels. *Journal of Consumer Behaviour*, 11(2) 1-9.
- Vinson, D.E., Scott, J.E. and Lamont, L.M. (1977). The role of personal values in marketing and consumer behaviour. *Journal of Marketing*, 41(2), 44-50.

- Wallston, K.A. (2005). The validity of the multidimensional health locus of control scales. *Journal of Health Psychology*, 10(5), 623-31.
- Wandel, M. (1997). Food labelling from a consumer perspective. *Journal of British Food*, 99(6), 212-219.
- Wells, C.S, and Wollack, J.A. (2003). An Instructor's Guide to Understanding Test Reliability. Testing & Evaluation Services University of Wisconsin 1025 W. Johnson St., #373 Madison, WI 53706. November 2003. Retrieved from <http://testing.wisc.edu/Reliability.pdf> on the 29/08/13.
- Wiggins, D. (2007). Nutritional labels the importance of knowing what you are eating. *Yahoo Voices*. 25<sup>th</sup> November 2007. Retrieved from <http://voices.yahoo.com/nutritional-labels-importance-knowing-what-668373.html> on the 24/05/12.
- Wood, W. and Neal, D, T. (2009). The habitual consumer. *Journal of Consumer Psychology* 19, 579–592.
- Young, L. and Swinburn, B. (2002). Impact of the *Pick the Tick* food information program on the salt content of food in New Zealand. *Journal of Health Promotion International*, 17(1), 13-19.
- Ye, G. and van Raaij, W.F. (1997). What inhibits the mere-exposure effect: Recollection or familiarity? *Journal of Economic Psychology* 18, 629-648.

## 13.0 APPENDIX



Information Sheet for Participants My name is Michelle Bouton , I am a Masters Marketing student conducting a study for my Thesis which aims to understand consumption behavior associated with food packaging. This is a quantitative study which will ask participants questions regarding their attitudes, habits, intentions, demographics and psychographics associated with eating and lifestyle habits. This information will be used to help determine the most effective way in aiding consumers to make informed consumption choices. The survey will take an estimated 20 minutes to complete. You may receive a copy of the project results by contacting the researcher at the conclusion of the project. Participation is voluntary and you have the right to withdraw at any stage without penalty. If you withdraw, I will do my best to remove any information relating to you. The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public without your prior consent. To ensure anonymity and confidentiality, personal details such as your name and contact details are not required. The researcher and supervisor are the only two people who will be granted access to the results, which will be securely stored and destroyed after five years. A thesis is a public document and will be available through the UC Library. The project is being carried out as a requirement for MCom in Marketing by Michelle Bouton under the supervision of Ekant Veer who can be contacted at [ekant.veer@canterbury.ac.nz](mailto:ekant.veer@canterbury.ac.nz). He will be pleased to discuss any concerns you may have about participation in the project. This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)). If you agree to participate in the study, you are asked to tick 'YES' on the next page of this survey stating that you agree to the above information Michelle Bouton

Q1 Consent Form I have read and understand the information sheet provided which gives me a full explanation of this project and I have raised any issues I have with the researcher via email. I understand what is required of me if I agree to take part in the research. I understand that participation is voluntary and I may withdraw at any time without penalty. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable. I understand that once I have completed the survey and finally click "Submit" I will no longer be able to withdraw my data. I understand that any information or opinions I provide will be kept confidential to the researcher and supervisor and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library. I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project. I understand that I can contact the researcher Michelle Bouton [mab262@uclive.ac.nz](mailto:mab262@uclive.ac.nz) or supervisor Ekant Veer [ekant.veer@canterbury.ac.nz](mailto:ekant.veer@canterbury.ac.nz) for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)) By clicking "YES", I agree to participate in this research project. BY CLICKING YES BELOW YOU CONSENT TO TAKING PART IN THE EXPERIMENT

☐ YES (1)

☐ NO (2)

If No Is Selected, Then Skip To End of Survey

CAREFULLY EXAMINE THE PRODUCT SHOWN BELOW. Scroll to ensure you view the entire image.



\*All 14 Manipulations are displayed on pages 148-151

Q2 This product seems

[illegible]

Q3 How likely are you to

	Very Unlikely (1)	Unlikely (2)	Somewhat Unlikely (3)	Occasionally (4)	Somewhat Likely (5)	Likely (6)	Very Likely (7)
Purchase this item or a similar item? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommend this product or a similar product to a friend? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel guilty after consuming this product? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stop consuming this product based on the nutritional information displayed in this picture? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Front-of- pack nutritional labelling is useful (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This labelling system is very useful (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand from this food label the nutritional value of this product (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel encouraged to exercise after consuming this product (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q5 Do you read nutritional food labels?

- ☐ Yes (1)
- ☐ No (2)

Q6 How much would you expect to pay for this sandwich?

- ☐ Less than \$3.00 (1)
- ☐ \$3.00-\$4.00 (2)
- ☐ \$4.00-\$5.00 (3)
- ☐ \$5.00-\$6.00 (4)
- ☐ More than \$6.00 (5)

Q7 How much would you be willing to pay for this sandwich?

- ☐ Less than \$3.00 (1)
- ☐ \$3.00-\$4.00 (2)
- ☐ \$4.00-\$5.00 (3)
- ☐ \$5.00-\$6.00 (4)
- ☐ More than \$6.00 (5)

Q8 Consuming this food product is

[illegible]

Q9 Would you be more likely or less likely to purchase the product given the information shown on the package?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Less Likely:More Likely (1)	○	○	○	○	○	○	○

Q10 Given the information shown on the front of the package, how likely is it that you would consider the purchase of the product?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Likely:Very Unlikely (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12 Rate your emotions according to the way the picture of the food product made you feel

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Unhappy:Happy (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unsatisfied:Satisfied (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pleased:Annoyed (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Melancholic:Content (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Despairing:Hopeful (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bored:Relaxed (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joyful:Not Joyful (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13 Did you notice the nutritional label on the packet?

- ☐ Yes (1)
- ☐ No (2)

Q14 Which of the following labels did you see on the sandwich?

- ☐ A person running (1)
- ☐ A person walking (2)
- ☐ A colored wheel (3)
- ☐ A daily consumption guide (4)
- ☐ Calories per serve (5)
- ☐ A warning message (6)
- ☐ A Tick (7)
- ☐ A star with calories per serve (8)
- ☐ There was no label (9)
- ☐ None of the above (10)

# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q15 Please agree or disagree with the following statements

[illegible]

Q16 Please agree or disagree with the following statements

[illegible]

Q17 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
I try to prevent health problems before I feel any symptoms (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about health hazards and try to take action to prevent them (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are so many things that can hurt you these days; I am not going to worry about them (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often worry about the health hazards I hear about but don't do anything, about them (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't take any action about health problems I hear about until I have a problem (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would rather enjoy my life than try to make sure I am not exposing myself to a health hazard (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't think health hazards I hear about will happen to me (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q18 How often do you undertake the following activities

[illegible]

Q19 I partake in positive healthy behaviors for the following reasons

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree Nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
To avoid tension and stress (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To stay healthy longer (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To stay fitter longer (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To enjoy life more (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To look younger (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If Do you read nutritional food labels? Yes Is Selected

Q20 What is the main reason why you read nutritional food labels?

- ☐ Weight conscious (1)
- ☐ Health conscious (2)
- ☐ Personal dietary requirements (3)
- ☐ Household dietary requirements (4)
- ☐ Other (5)

Q21 On average how often do you exercise?

- ☐ Never (1)
- ☐ Less than Once a Month (2)
- ☐ Once a Month (3)
- ☐ 2-3 Times a Month (4)
- ☐ Once a Week (5)
- ☐ 2-3 Times a Week (6)
- ☐ 4-5 times a week (7)
- ☐ More than 5 times a week (8)
- ☐ Daily (9)

# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q22 Please agree or disagree with the following statements

[illegible]

Q23 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
I want to know more about nutritional information (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish nutritional information was more widely available (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy reading about nutritional information (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am interested in looking for nutritional information on labels (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish nutritional information was easier to understand (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If nutritional information was easier to understand I would read it more often (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q24 How often do you do the following?

[illegible]

Q25 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
I usually pay attention to nutritional information when I see it in an advertisement or elsewhere (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use nutritional information on the label when making most of my food selections (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't spend much time in the super market reading nutritional information (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I read about nutrition on-line, in magazines and books (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q26 In general, how much do you think you know about the topic of nutrition?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Not knowledgeable at all:Extremely knowledgeable (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q27 Compared to most people, I am quite knowledgeable about nutrition

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Strongly Disagree:Strongly Agree (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q28 I do NOT know very much about nutrition in general

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Strongly Disagree:Strongly Agree (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29 On average, how many calories should a person consume a day, according to the daily intake guide found on food products?

- ☐ 2100 Calories (1)
- ☐ 3000 calories (2)
- ☐ 1400 calories (3)
- ☐ 3900 calories (4)

Q30 If you ran at an average speed of 10km an hour for an hour, on average how many calories would you burn?

- ☐ 300 calories (1)
- ☐ 600 Calories (2)
- ☐ 450 calories (3)
- ☐ 750 calories (4)

Q31 Nutritional guidelines suggest that no more than \_\_\_\_\_per cent of calories per day should come from fat.

- ☐ 20% (1)
- ☐ 30% (2)
- ☐ 40% (3)
- ☐ 10% (4)

Q32 How many calories on average are in 720kj?

- ☐ 230 Calories (1)
- ☐ 170 Calories (2)
- ☐ 110 Calories (3)

Q33 How long would you expect to have to walk at an average pace of 6km per hour to burn off a 355ml can of cola?

- ☐ 90 minutes (1)
- ☐ 20 minutes (2)
- ☐ 10 minutes (3)
- ☐ 40 minutes (4)

Q34 If you eat 2000 calories a day, your daily saturated fat intake should be less than how many grams?

- ☐ 20 grams (1)
- ☐ 35 grams (2)
- ☐ 100 grams (3)
- ☐ 55 grams (4)

Q35 Risk of higher blood pressure is most likely to be reduced by eating a diet with \_\_\_\_\_?

- ☐ Less salt (1)
- ☐ Less fat (2)
- ☐ Less sugar (3)

Q36 Please rate your level of confidence to your answers for the above 7 questions

\_\_\_\_\_ Level of confidence out of 100 (1)

Q37 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
I can avoid common health problems by reducing my sodium intake (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can stay healthy longer by getting enough rest and sleep now (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regular exercise helps me to avoid common health problems later in life (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q38 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
On a whole I am satisfied with myself (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to do things as well as most other people (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I certainly feel useless at times (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could have more respect for myself (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All in all, I am inclined to feel that I am a failure (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I have a number of good qualities (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q39 Please agree or disagree with the following statements

[illegible]

Q40 How do you feel right now?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Happy:Sad (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bad Mood:Good Mood (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irritable:Pleased (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cheerful:Depressed (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q41 Today the likelihood I will:

	Very Unlikely (1)	Unlikely (2)	Somewhat Unlikely (3)	Undecided (4)	Somewhat Likely (5)	Likely (6)	Very Likely (7)
Exercise (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eat 5+ of fruit and vegetables (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consume takeaways (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cook a meal (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Snack between meals (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eat breakfast, lunch and dinner (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consume healthy meals (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Count the calories I consume (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take supplements or vitamins to enhance my diet (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q42 Do you eat the following meals everyday?

	Never (1)	Rarely (2)	Somewhat Rarely (3)	Sometimes (4)	Somewhat Often (5)	Often (6)	All of the Time (7)
Breakfast (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lunch (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dinner (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q43 How often do you do the following?

[illegible]

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
If I eat a larger than usual lunch, I will skip dinner (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am very conscious of how much fat is in the food I eat (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use low-fat food products (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I carefully watch the portion sizes of my foods (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I choose healthy foods to prevent heart disease (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I am busy, I will eat a snack instead of eat lunch (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes snack even when I am not hungry (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I eat out because it is more convenient than eating at home (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love to cook (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I do not feel hungry, I will skip a meal even if it is time to eat (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When choosing fast food, I pick a place that offers healthy foods (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

[illegible]

Q45 Please agree or disagree with the following statements

[illegible]

Q46 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
I exercise so I can eat what I want (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I eat bad foods I am more likely to exercise (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If my friends exercise I feel encourage to exercise too (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I was told how much time I would need to exercise for after consuming a product I would more likely exercise (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I exercise to feel good about myself (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Q47 Please agree or disagree with the following statements

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
I usually buy food products that are on sale (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy the lowest priced food brands that will suit my needs (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When it comes to choosing most food products, I rely heavily on price (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually pack my own lunch (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often buy pre-packaged food products to save time (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not too concerned about the price of my lunch- I usually select the product which looks the healthiest (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q48 What is your age?

- ☐ 19-23 (1)
- ☐ 24-29 (2)
- ☐ 30-36 (3)
- ☐ 32-39 (4)
- ☐ 40-49 (5)
- ☐ 50-59 (6)
- ☐ 60 + (7)
- ☐ 16-18 (8)

## Michelle Bouton

Q49 What is your gender?

- ☐ Male (1)
- ☐ Female (2)

Q50 What is your ethnicity?

- ☐ New Zealand European (1)
- ☐ Māori (2)
- ☐ Pacific Island (3)
- ☐ Asian (4)
- ☐ Indian (5)
- ☐ Other ( Please state) (6) \_\_\_\_\_
- ☐ I would prefer not to answer (7)
- ☐ European (8)
- ☐ American (9)

Q51 What is your Occupation?

- ☐ Student (1)
- ☐ Unemployed (2)
- ☐ Laborer/ Technician/ Trade worker (3)
- ☐ Business, Human Resource and Marketing Professionals (4)
- ☐ Receptionist/ Administrator/ Clerk (5)
- ☐ Education professional - eg Teacher (6)
- ☐ Health Professional- eg Doctor/Nurse (7)
- ☐ Hospitality/ Retail/ Service Worker (8)
- ☐ Farmer/ Farm Manager (9)
- ☐ Legal, Social and Welfare Professionals (10)
- ☐ Design- Engineering/ Science/ Transport Professional (11)
- ☐ Arts or Media Professional eg Artist, Journalist (12)
- ☐ Machinery/ Transport Operator (13)
- ☐ Payed Sports Player (14)
- ☐ Other (15)

Q52 Please select your annual income bracket

- ☐ Less than \$5,000 (1)
- ☐ \$5,001 – \$15,000 (2)
- ☐ \$15,001 – \$30,000 (3)
- ☐ \$30,001 – \$45,000 (4)
- ☐ \$45,001 – \$65,000 (5)
- ☐ \$65,001 – \$85,000 (6)
- ☐ \$85,001 – \$120,000 (7)
- ☐ \$120,001 or more (8)
- ☐ I would prefer not to answer (9)

Q53 What country do you live in?

- ☐ New Zealand (1)
- ☐ USA (2)
- ☐ Australia (3)
- ☐ UK (4)
- ☐ Other ( Please state) (5) \_\_\_\_\_

# The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness

Unhealthy



Healthy







## The Role of Differential Nutritional Labelling on Consumers' Food Choices and Perceptions of Healthfulness









Telephone: 027 349 1404

Email: [mab262@uclive.ac.nz](mailto:mab262@uclive.ac.nz)

31/07/2013

## **Nutritional Labels; the Influence on Consumption Behaviour**

### **Information Sheet for Parents**

*My name is Michelle Bouton , I am a Masters Marketing student conducting a study for my Thesis which aims to understand consumption behaviour associated with food packaging. This is a quantitative study which will ask participants questions regarding their attitudes, habits, intentions, demographics and psychographics associated with eating and lifestyle habits. This information will be used to help determine the most effective way in aiding consumers to make informed consumption choices.*

The participant's will be required to complete an online survey relating to their attitudes, habits and intentions associated with their consumption behaviours. Questions relating to their demographics, psychographics, nutritional and health knowledge will also be include in the survey. The survey will take an estimated 20 minutes to complete.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: identity will not be made public without prior consent. To ensure anonymity and confidentiality, personal details such as names and contact details are not required. The researcher and supervisor are the only two people who will be granted access to the results, which will be securely stored and destroyed after five years. A thesis is a public document and will be available through the UC Library.

The project is being carried out as a requirement for MCom in Marketing by Michelle Bouton under the supervision of Ekant Veer who can be contacted at [ekant.veer@canterbury.ac.nz](mailto:ekant.veer@canterbury.ac.nz). He will be pleased to discuss any concerns you may have about participation in the project.

This project has been approved by (school principal). Participation is entirely voluntary and will not interfere with your son/daughter's learning in any way.

If you wish to complete this survey yourself to please go to the following link, your participation is greatly appreciated [http://canterbury.qualtrics.com/SE/?SID=SV\\_1TeXIUxCvjCbQZn](http://canterbury.qualtrics.com/SE/?SID=SV_1TeXIUxCvjCbQZn)

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

Kind regards,

Michelle Bouton

Telephone: 027 349 1404

Email: [mab262@uclive.ac.nz](mailto:mab262@uclive.ac.nz)

Date: 31/07/2013

## **Nutritional Labels; the Influence on Consumption Behaviour**

### **Consent Form for Parents of Participants**

I have read and understand the information sheet provided which gives me a full explanation of this project and I have raised any issues I have with the researcher via email.

I understand what is required of my son/daughter if I agree for them to take part in the research.

I understand that participation is voluntary and will not interfere with your son/daughter's learning in any way. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.

I understand that any information or opinions they provide will be kept confidential to the researcher and supervisor and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library.

I understand that I can contact the researcher Michelle Bouton [mab262@uclive.ac.nz](mailto:mab262@uclive.ac.nz) or supervisor Ekant Veer [ekant.veer@canterbury.ac.nz](mailto:ekant.veer@canterbury.ac.nz) for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz))

If you would like to complete the survey too please visit the following link, your participation is greatly appreciated [http://canterbury.qualtrics.com/SE/?SID=SV\\_1TeXIUxCvjCbQZn](http://canterbury.qualtrics.com/SE/?SID=SV_1TeXIUxCvjCbQZn)

If you agree for your child to participate in the study, you are asked to sign below stating that you agree to the above information.

---

(signature)

---

(date)